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Vol. 156, No. 20

May 24, 1945

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## Help Wanted—And Offered

**S**ELLING, in the sense of the act of persuading people to buy, began to go out of the window early in 1940, after the fall of France and the inauguration of our defense program. It has been virtually nonexistent since the attack on Pearl Harbor on December 7, 1941, and the beginning of our war program. Since then selling has abdicated as the originator of the urge to buy, in favor of Uncle Sam's purchases and the shortages of almost everything.

In this period a new kind of salesmanship has come into the picture. It consists in keeping people sold on products that are now unobtainable or almost so. Witness the advertising of hard-to-get cigarettes or impossible-to-get radios and television sets or a hundred other products in short supply.

This job of freezing consumer demand for use after the war has been very ably done as has been the task of the individual salesman in keeping customer good-will alive even without the ability to supply products. But this is an evanescent condition that will pass as soon as the Japs have taken enough pounding.

When that time comes, and it won't be long now, the need for the old fashioned sort of individual selling that fetches home the bacon will come with it. The ability to sell in a competitive market will be sorely needed in every branch of industrial and commercial activities if we are to maintain the necessary postwar employment. Selling leads the procession of the movement of goods and certainly we will not reach the goal of 6 to 8 million more jobs than in 1939 unless somebody goes out and gets the orders.

This is a serious problem for every employer and for the country as a whole. Many thousands of our younger salesmen have joined the ranks and are shelling instead of selling. They will need retraining when they come back. Many more thousands of salesmen are out of practice because the buyers and not the sellers have been "accentuating the positive" during the past several years. And to add to the difficulty, there has been an absence of the normal influx of salesmen into industry and business through this war period.

So a number one problem for employers of all kinds will be the selecting and training of postwar sales personnel. Right now is not too soon to do something about it.

To help solve this highly important problem, the Committee for Economic Development, through the National Society of Sales Training Executives, has issued five helpful pamphlets on this subject. Number 1 deals with "Attitude and Preparation"; Number 2 with "Planning the Program"; Number 3 with "Getting Action"; Number 4 with "Checking Results and Following Through," and Number 5 with "Postwar Outlook for Sales Training." The set of five are available through the Committee for Economic Development, 285 Madison Ave., New York 17, N. Y. The price per set is 30 cents.

If you have not already secured this very helpful information on a very important subject, we suggest that you do so promptly.

*J. H. Van Deventer*



*Skin rolls, shot blasted in 17 grades of roughness, produce Inland Sheets that are easy to draw. The roll shown above has been ground, then shot blasted on one end to show contrast between ground and shot blasted surfaces.*

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### **that revolutionized deep drawing**

Several years before the start of World War II Inland engineers and metallurgists developed a new type of cold rolled sheet that solved a baffling deep drawing problem. The part was a deep drawn front fender on which breakage had been running from 30 to 50%. The special sheet produced by Inland resulted in thousands of these difficult fenders formed with only 3% average breakage.

This Inland development was a special method of preparing rolls for the temper mills. Instead of the usual smooth and bright surface, the Inland sheets were given a new type of surface that permitted radical improvements in steel processing. It also enabled fabricators

to improve die performance. This "new surface for severe draw jobs" held the die compound, permitted better control of slippage, required less hold-down pressure, and provided freedom from scoring, resulting in more uniform draw distribution so necessary and desirable in meeting the intricate drawing requirements of modern designers and fabricators.

This is only one of the many product improvements pioneered by Inland—improvements that are making better equipment for war and that will help produce finer peacetime products.

An Inland specialist awaits your call to tell you about these developments and their many applications.



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## **INLAND STEEL COMPANY**

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► Cutbacks effected on the medium artillery program were not quite as large as expected, amounting to about 30 to 40 per cent. This cut affected 105, 75, and 90 mm. artillery shell production, but 60 and 81 mm. mortar schedules were left untouched.

► The construction project at New Martinsville, W. Va., for a \$6,000,000 plant for tungsten carbide shell core operations has been cancelled, as have large orders for miscellaneous artillery accessories, including gun tubes.

► Deliveries of transport planes for the air lines under relaxed WPB regulations are not expected before the first quarter of 1946. Shortages of engineering manpower and Army-Navy clearances for plants will hold up production.

Early assistance for light plane manufacturers will be very limited under the "spot authorization" plan. Republic is expected to get away to an early start on production of its light amphibian for personal use at the Evansville plant where P-47 production is ceasing.

► Jones & Laughlin will close its foundry at the Lakeside plant of the Otis works at Cleveland. Too severe competition from more modern operations is stated to be the cause of the gradual curtailment of operations at the 55 year old plant.

► Following a strike in the open hearth department at Jones & Laughlin, Pittsburgh, 64 men in the soaking pit group have been replaced by new hires. The company states that it considers the men to have quit.

► A start on automobile production will come on July 1 or earlier. Restrictions will soon be lifted on the production of spare parts, and truck production will be amplified.

Production of 214,678 passenger cars is authorized for this year, subject to review as the steel situation develops. Labor is calling for unlimited production immediately as the specter of unemployment again haunts industry.

U. S. Steel officials predict that the auto industry will pay \$6 to \$8 per ton more for steel than before the war, probably anticipating OPA price increases.

► Carnegie-Illinois' Farrell, Pa. ordnance plant is being shut down and the 400 employees will be absorbed into steel operations there. Producing armor plate for tanks, cutbacks and cancellations have made possible the shutdown.

► Construction of an electric furnace melting plant to produce high quality steels from California magnetite, to be located adjacent to the Shasta Dam project in California is being studied by the Bureau of Mines. Low cost power would be the key to the project.

► Most probable postwar annual market for finished steel in the 11 far western states will be about 3,300,000 net tons annually. This represents a 33 per cent increase over the average for 1936 to 1940.

► The chemical reaction of chromium salts with a zinc or cadmium surface will produce a corrosion resistant film that is intimately welded into the part as well as on the surface.

This Iridite mixture can also be applied to hot dip galvanized parts and to zinc die castings. The treatment does not increase dimensions since it removes about 0.00003 to 0.00004 in. of the plate while the average thickness of the film deposited is 0.00001 in.

Iridite films are extremely ductile and will normally withstand any bending operation that the plated surface beneath it will stand.

► Lead coatings on steel when less than 0.00025 in. thick, whether electro-deposited or hot dipped, afford very short-lived protection to steel exposed to the atmosphere. Thinner coatings show more pinholes for a given time of exposure.

In industrial, semi-industrial and seacoast atmospheres, a copper undercoat acts to retard the initial appearance of rust spots in the lighter coatings. Where lead coatings are plated directly on raw steel, cold rolling will reduce the size and number of pores in the coating.



# Iridite Treatment For Plated Parts

By J. ALBIN

**... Zinc and cadmium, both basically good protective films on steel, are still actively capable of corroding. By forming a coat which keeps air and moisture away from the metal surface, Iridite protects the cadmium or zinc plate to a marked degree. Iridite corrosion resistant surfaces can be obtained in several colors and finishes.**

**M**ANY of the soluble compounds and salts of chromium are able to impart some degree of passivity to metal surfaces. Chrome salts have been used in a variety of conditions for this purpose, for example, in pipe and duct systems through which other corrosive liquids are pumped. Zinc chromate primers are common in paint applications.

The Iridite process is a method of treating a zinc or cadmium surface so that it will combine with a chrome salt in such a way that the newly formed compound will be intimately welded into as well as on the surface. The process permits the deposition of a sufficient quantity or thickness of protective compound to withstand a reasonable amount of wear, resistance

to spray, liquids, condensed moisture, etc.

Iridite is the trade name for a chemical mixture developed by Rheem Research Products, Inc., 2523 Pennsylvania Ave., Baltimore 17, a totally owned subsidiary of the Rheem Mfg. Co. The larger portion of normal business of the parent company is the manufacture of steel drums, hot water tanks and water heaters. Research undertaken to increase corrosion resistance of galvanized hot water tanks, especially in critical water areas, led to the development of Iridite.

Primarily Iridite is applied to cadmium or zinc plated surfaces, but the finish is now being applied as well to hot dip galvanized parts and to zinc die castings. The coating is of

semi-hard amorphous character and is produced by dipping for a short length of time in the Iridite solution. To get an Iridite finish with colors other than the standard olive drab or bronze, it is necessary to dip the coated part in a dye solution. All coatings irrespective of color possess approximately the same degree of resistance to corrosion, thickness and opacity.

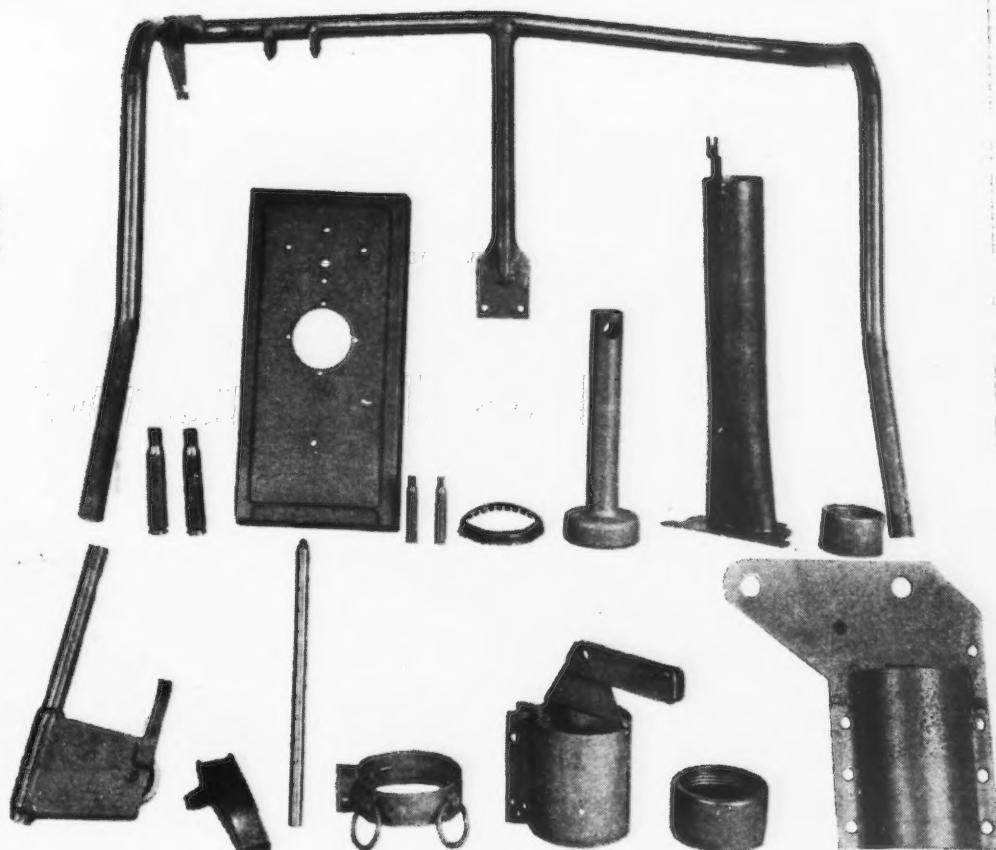
Iridite cannot be applied directly to steel. It is necessary for a chemical reaction to set in between the Iridite solution and the plated metal before a true Iridite coating can be produced. The compound does not react with steel in the same way that it does with zinc or cadmium and for this reason one way to determine whether or not a part has been properly zinc or cadmium plated is to dip the part in an Iridite solution. A coat will not form on areas that have left uncovered by the plating metal.

The Iridite does not increase the dimension of a part. The treatment removes about 0.00003-4 in. of the plate while the average thickness of the film is 0.00001 in. The film is



**FIG. 1 — Aircraft propeller components made by Nash-Kelvinator Propeller Division. At the upper left is a part after it has received an Iridite coating. Compare its luster with the untreated part at the right. Below-right is an Iridited propeller hub. Final finish is largely determined by the surface of the plate. A reduced luster may be attained by prolonging the dip in the hot rinse.**

FIG. 2—Variety of parts given Iridite treatment. The effect on external dimensions is negligible.



extremely ductile and will normally withstand any bending operation that the plated surface beneath it will stand. No cleavage plane is regarded as existing between the base metal and the film.

Iridite is classified as having mild resistance to abrasion, but it has been found in general practice that it will stand rough handling better than many types of paints—for instance, Iridited zinc-plated wire has withstood wire drawing operations under standard wire mill practices.

A great variety of products have been produced with an Iridite finish, among which may be mentioned the following: Aircraft propeller hubs, landing gear struts, gas mask parts, radio panels, zinc die castings; and hardware such as bolts, washers, screws and plates, (Figs. 1 and 2).

#### Available in Several Colors

The most widely known Iridite coating at present is Iridite O. D. (olive drab). Because of its camouflage matching properties and high corrosion resistance, it is widely used on many ordnance components. At the present time Iridite comes in these colors: Olive drab, bronze, black, green, blue and red. The olive drab and bronze are natural colors, generated as a result of the reaction of the Iridite solution with the metallic surface. All other colors are obtained by a dyeing operation following the Iriditing operation. The dyes are sold in separate packages to be mixed with water and acetic acid and maintained at a working pH range of 3.5 to 4.0 by subsequent additions of dye or acetic acid or both to maintain the pH range. The Iridite O. D. is the

Iridite on which all dye operations are done to obtain the above dyed colors, and the resulting dyed colors are colorfast and do not affect the anti-corrosion characteristics of the coating. It is possible for a user to have several dye tanks in his production line, but have only one O. D. Iridite tank. With this combination he can provide a corresponding number of finishes from one basic Iridite treatment.

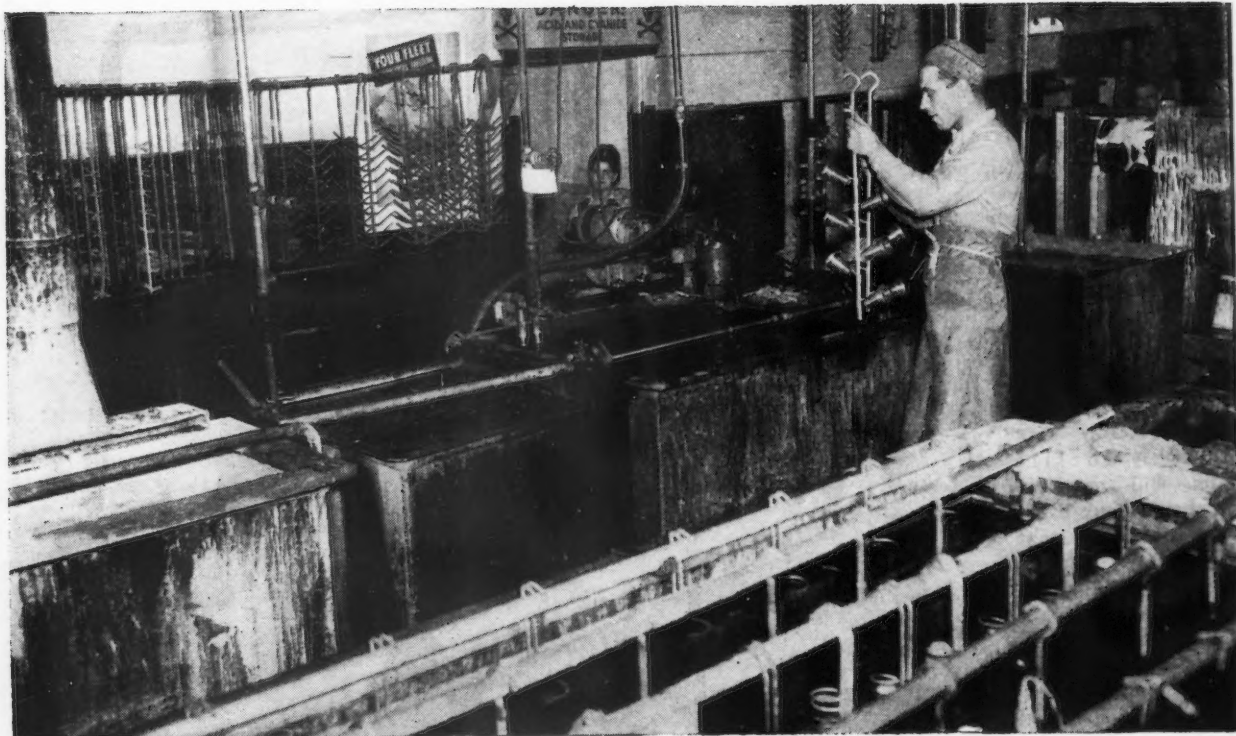
By a variation of plating and operating technique, Iridite olive drab as well as the other Iridite colors can be made lusterless or bright in ap-

pearance, depending on the finish of the base metal, type of plating and Iridite procedure followed. Iridite takes the characteristic of the underlying plate. A bright plate will tend to produce a bright Iridite, and, of course, both of these are affected by the finish of the underlying metal. A bright Iridite can also be subsequently dulled by variation of the time in the hot rinse.

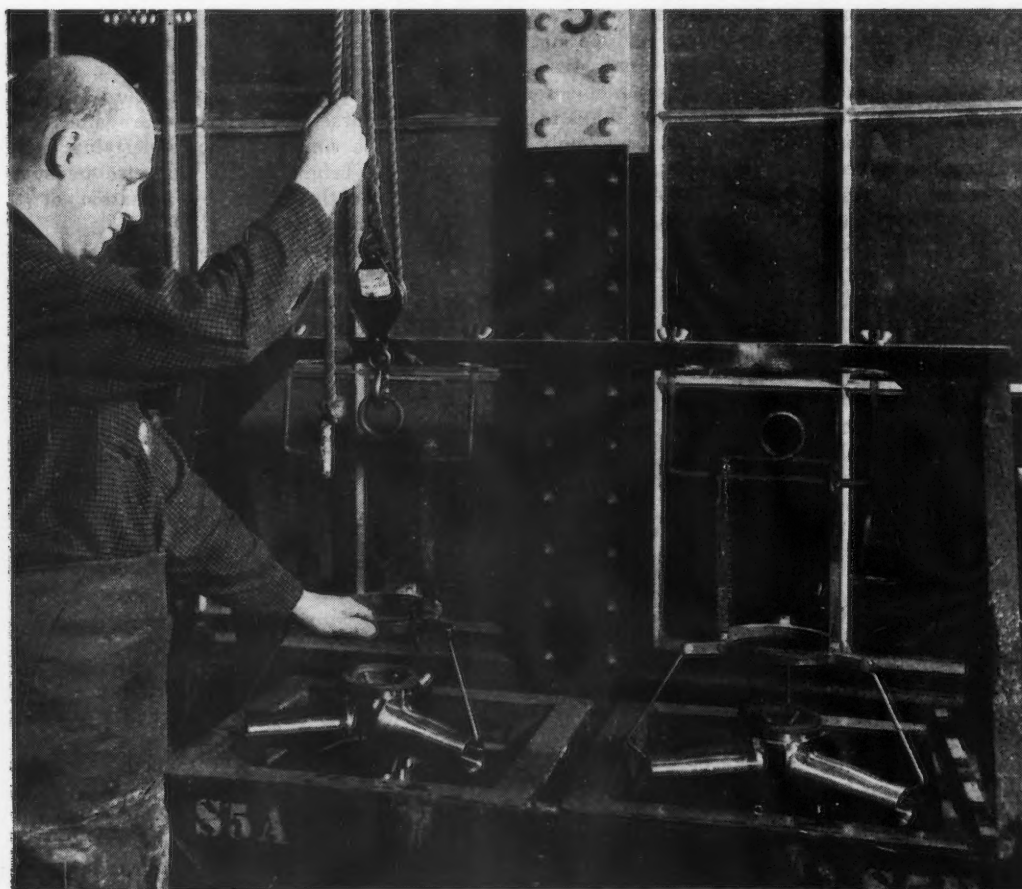
There is another field in the use of Iridite and that is as an undercoat for paint. Here the Iridite has a characteristic of providing a very satisfactory bond for paint to a protected sur-

FIG. 3—These three carburetor parts made as zinc die castings have been exposed to 432 hr. of salt spray. The part at the left was given an olive drab Iridite coat before immersion, that in the center a black Iridite coat and the one at the right was left untreated.





**FIG. 4**—Showing arrangement of Iridite tank and rinse tanks in a hand operated setup at the F. L. Jacobs plant in Detroit. Worker is lifting shell fuses from Iridite tank on a rack which will be transferred to rinse adjoining and finally put in steaming water bath at extreme right.



**FIG. 5**—Propeller hubs suspended from specially designed racks are being lowered into Iridite tank at Nash-Kelvinator Propeller Division.



face without sacrificing any of the anti-corrosion characteristics of the Iridite coating. Extensive tests are now being carried out by a number of paint companies and laboratories, for both air dried and baked enamels.

The Iridite treatment is essential for both zinc and cadmium surfaces where corrosive atmospheres are encountered. A plated zinc surface will show the formation of corrosion products after only a few hours exposure to a salt spray atmosphere whereas an Iridited zinc plated surface will withstand several hundred hours of salt spray (Fig. 3). As much as 700 hr. salt spray resistance has been recorded on Iridited zinc.

users who wish to operate Iridite as a subsequent operation to either the still or semi-automatic plating, he can follow one of two methods of operating his solution. He may run the working solution to complete depletion, dump it, and make an entirely new one; or he may maintain his operating solution at his selected optimum working range by the additions of equal parts of A and B. It has been found that maximum life of the Iridite solution can be obtained by maintaining the pH of the Iridite solution between 2.5 and 3.0. It has been proven that under these conditions, the square foot production of the solution is increased 20 to 25 per cent

tions work best when they are a component part of the plating line. (See flow diagram, Fig. 8a). Under such a setup, the parts should be thoroughly rinsed after removal from the plating solutions, Iridited, cold rinsed, and then hot rinsed. The hot rinsing is for the express purpose of facilitating drying. This hot rinsing characteristic is an advantage in that it greatly reduces labor costs and the need for drying equipment, which otherwise would follow cold rinsing. It is recommended that the rinsing temperature be approximately 160 deg. F., which is adequate for rapid drying. It is practical to handle the parts immediately after drying and in some op-

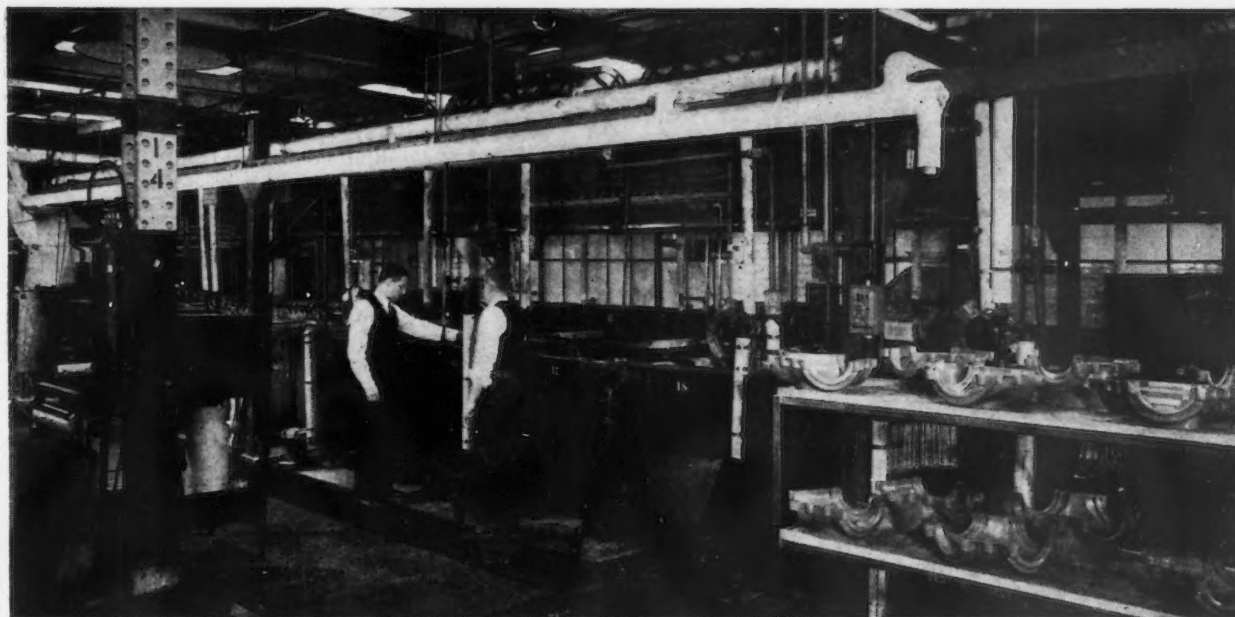


FIG. 6—An automatic Iriditing setup at Nash-Kelvinator.

The solutions are obtainable in a concentrated form as units—a unit consisting of one 12½ gal. carboy of A solution, and one 12½ gal. carboy of B solution—these solutions being diluted on a 1-1-8 ratio (one part of A, one part of B and 8 parts of water).

#### Methods of Treatment

The Iridite treatment is extremely flexible and is readily adaptable to all types of processing lines (Figs. 4 and 5). For instance, where a user of Iridite would like to include the Iridite operation as part of his fully automatic plating line in which the time cycle must be fixed (Figs. 6 and 7), this can be accomplished by the control of the pH of the solution by additions of equal parts of A and B concentrated solutions to maintain the pH which is commensurate with the time cycle required. In the case of

above that of working the solution to depletion. The ability to regenerate the Iridite solution indefinitely depends on the size of the installation, as naturally a 500-gal. tank can be replenished over a greater period of time than can a solution operating out of a 50-gal. crock.

Due to the acidic nature of the Iridite and the dye solution used for coloring, it is necessary to have either rubber lined or acid resistant brick lined tanks. Stoneware crocks are also satisfactory, but lead lined tanks are not recommended. All solutions give optimum performance at room temperatures, but can be worked as high as 100 deg. F. However, it is definitely recommended that solutions be maintained as close to room temperature as practical.

On plated surfaces, Iriditing opera-

tions parts are in assembly 2 or 3 hr. after Iriditing.

Where Iriditing is not a component part of the plating line, and the plated parts have become oxidized, it is necessary to immerse them in a bright dip in a ½ per cent nitric acid solution, rinse and then Iridite (See Fig. 8b). If the parts have been handled or are greasy, an alkaline cleaner should precede the bright dip.

In Iriditing a galvanized surface, if the Iridite is a part of the production line it is necessary to allow the hot-dip galvanized part to cool down to approximately 100 deg. F., or less, before giving it the Iridite treatment. If, however, the galvanized part has become oxidized, it is necessary also to give it a treatment in the bright dip referred to above.

In Iriditing zinc die castings (Fig.

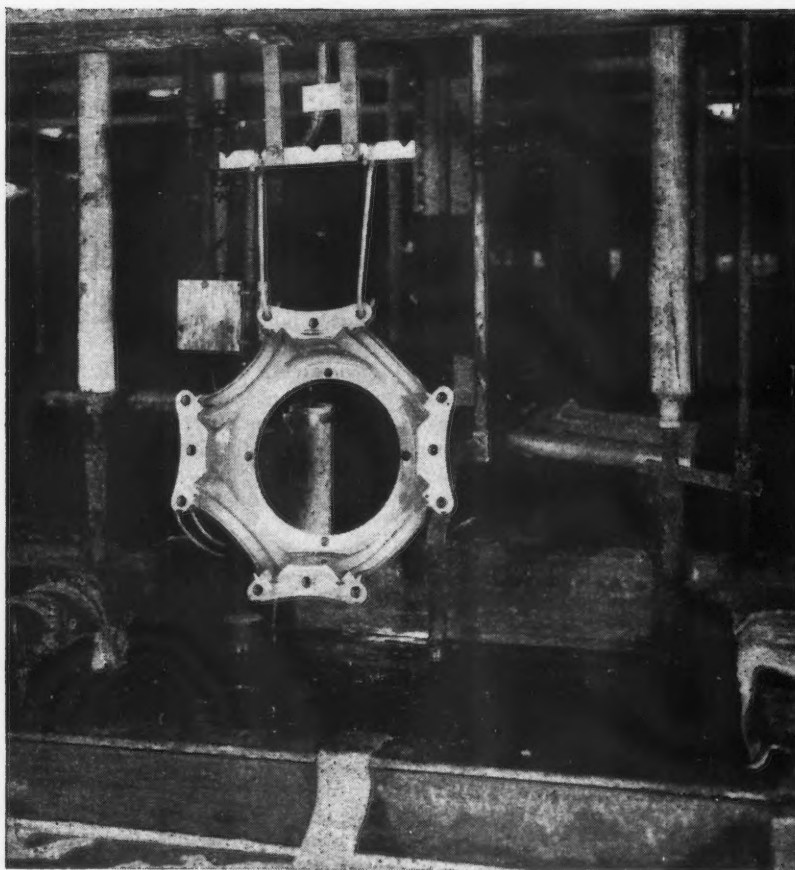


FIG. 7—Close-up of Iridite bath in the automatic line shown in Fig. 6

8c), it is not necessary to condition the zinc die casting with a flash plate of zinc, but merely clean it in accordance with the following: Soak in a hot anodic type cleaner, *without current*, at 200 deg. F. at a concentration of 12 oz. per gal. for several minutes. A cold running rinse follows this, after which neutralization

in a muriatic or sulphuric acid solution at room temperature up to 10 per cent strength for a few seconds. Then a cold running rinse, followed by Iriditing.

#### Operating Conditions

As pointed out before, the action of the Iridite on a plated surface is

chemical in nature dependent upon the three factors of time, temperature and pH. It is these important aspects of the Iridite treatment that will now be treated in detail.

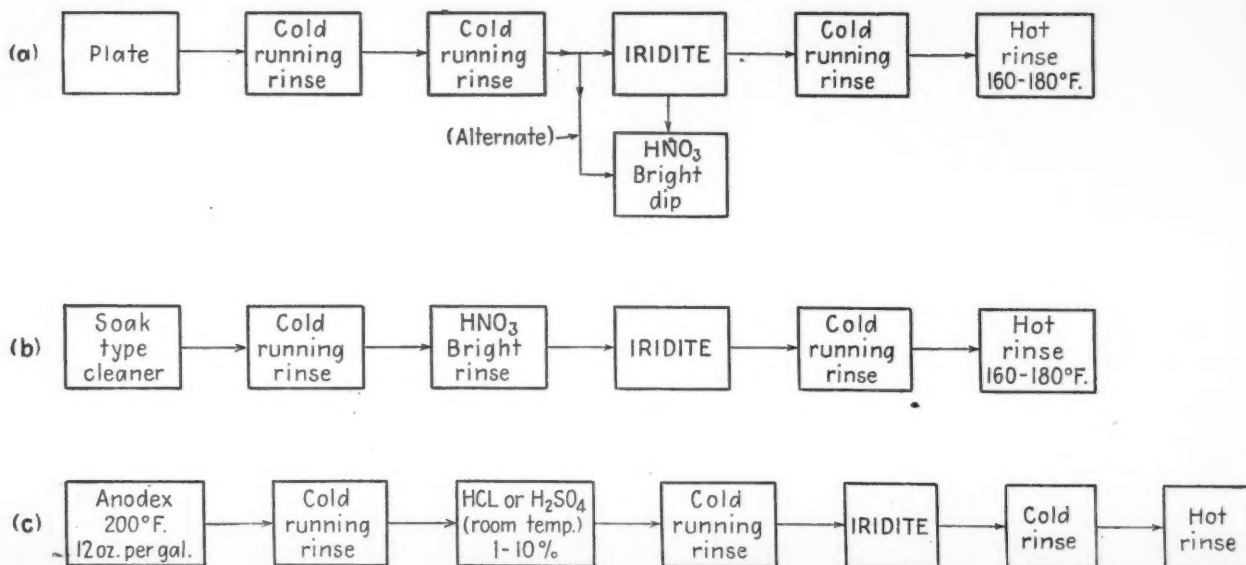
The time and pH of the Iridite bath should be closely controlled for desirable results and especially for color. Although the color may vary over a considerable range, from pale blue green to a deep olive green, the salt spray resistance tests indicate little change in corrosive resistance of the surface of the parts.

In freshly made Iridite, an average thickness of zinc plate takes from 10 to 20 sec. for complete coating. As the solution depletes the processing time increases up to 40 sec. A cold solution requires longer immersion than a warm one. The length of time is often a good index of the temperature or the weakness of the bath.

In some cases a longer immersion time may be required as the result of a specific plant operation. In this case dilution of the Iridite solution with an equal quantity of water will run the necessary time up to 1 to 2 min. This may be best determined in the individual case by trial. The time may be greatly extended by a very cold final rinse after plating. In fact, this retardation may be sufficient to prevent the proper forming of the Iridite on thinly plated work. In such case moderate heating of the final zinc rinse tank is recommended.

It is a definite commercial advantage of this process that the immersion time may be varied by this simple dilution of the solution. Many plants are equipped with full auto-

FIG. 8 (a) Flow diagram of continuous plating line with Iridite. (b) Procedure for removing oxide from previously plated work before Iridite. (c) Procedure for Iriditing zinc die castings.



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matic systems and if some protective coating is to be applied over the zinc plating it must be done by a process that can be fitted to the already established cycle of the machine. Since a slight-immersion does no harm it is a simple process to figure the necessary dilution to give trouble-free operation on any time cycle.

Air or mechanical agitation can

the less luster on the work (Fig. 1). The color tends occasionally to be lighter after a hot rinse. On die castings, the reverse may occasionally be true.

Inadequate rinsing or contaminated rinse tanks, due to too infrequent tank cleaning, should be guarded against. Alkali is notoriously difficult to remove by cold rinsing. When such

found to give the proper drying in the time allowable. This will vary with the work. Drying time is largely determined by the method of handling. Thousands of small parts are best rinsed in hot water, centrifuged and allowed to dry in their shipping containers. Centrifuge baskets should be filled in order to avoid abrasion from tumbling. Other parts may be

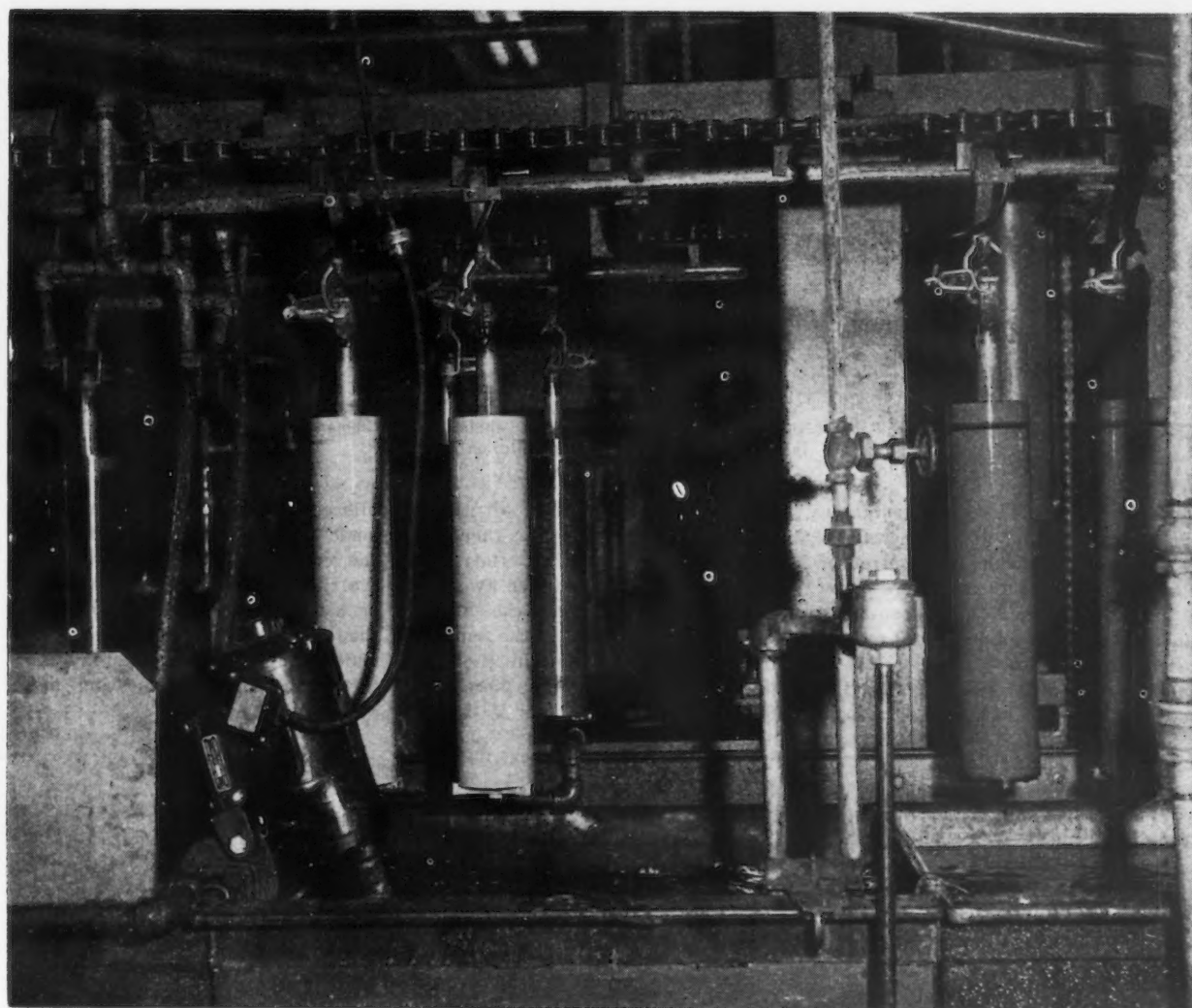


FIG. 9—Part of the conveyon setup at the Chrysler plant in Detroit for zinc plating and Iridizing rockets in a single line.

also be applied in the Iridite tank to facilitate the action of the solution on all surfaces of the plated objects and especially in deep recessed areas of the parts.

### Two Rinses Preferred

Two rinses after the Iridite are preferable. Normally, the first rinse is a cold running water rinse, the second a hot water rinse. The latter is kept at 150 to 180 deg. F. The temperature of the hot water rinse has some effect on the final appearance of the coating. In general, the hotter the rinse

alkali is carried over to the Iridite dip, not only is the solution unnecessarily depleted but blotched and uneven films result, frequently requiring reprocessing. Ragged gray splotches are an indication of this trouble. Since inadequate cleaning before plating can give similar results a good check, where alkali carry-over is suspected, is a hot final rinse before Iridizing.

Since the sole purpose of the hot rinse is to facilitate drying, as a practical matter, the hot rinse should be kept at whatever temperature is

dried by racking them up in still air, or placing in a dry oven, usually a tunnel with warm circulating air.

An ingenious conveyor setup for taking care of the different dipping periods in the zinc bath and in the Iridite solution may be found in the rocket division of the Chrysler Corp., Detroit. Two stages of dipping are shown in Figs. 9 and 10.

The rockets travel on the continuous conveyor in pairs, and the conveyor raises and lowers automatically, dipping the rockets in the various baths as they hang from fixtures.

Hot  
rinse



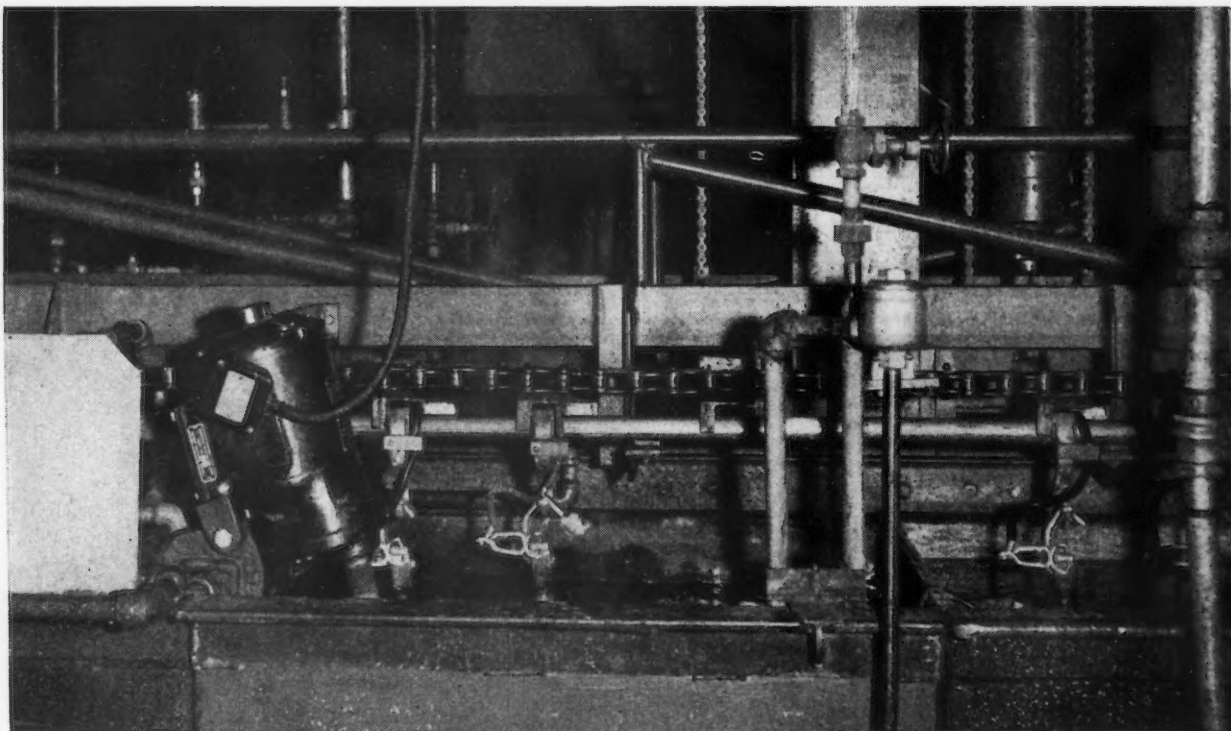


FIG. 10—The fixture from which all the rockets are suspended is lowered by chains for the immersion period. The motor attached to the left side of the tank is for agitation purposes.

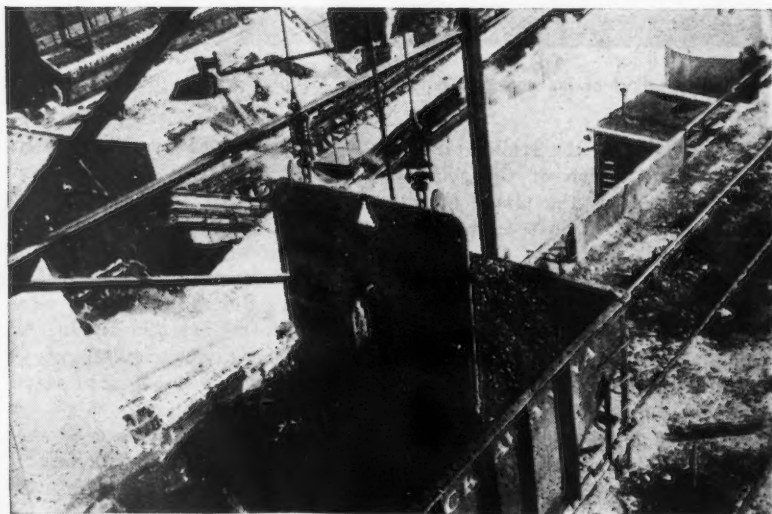
This conveyor operates in a rectangular merry-go-round approximately 37 ft. long and 7 ft. wide. The conveyor itself is 75 ft. long and operates on a time cycle of 25.65 min., loading to unloading, which produces 130 rockets per hour.

There are nine dips and a drying tank. First the rockets go into an

electro clean tank, then to a cold rinse, then to an acid dip, then cold rinse, then zinc plating, then cold rinse, then the Iridite, then two cold rinses and finally into the drying tank. Immersion time is the same in all these tanks except in the zinc plating bath, where the pieces remain for 13½ min. This is accom-

plished by a tripping device which unloads the rockets automatically from the conveyor belt as they dip into the zinc, whereupon they are carried on a supplemental belt to the end of the zinc bath at slow speed, after which they are picked up again by the main conveyor belt and moved along.

DESIGNED to facilitate the unloading of soft coal where the coal has frozen and congealed and will not pass through the unloading trapdoor of the gondola or hopper car, a two drum electro-hydraulic friction clutch worm-gear hoist operating a coal slicer has been developed by Silent Hoist Winch & Crane Co., Brooklyn 20, N. Y. The hoist raises and lowers the slicer bar which chops up the coal so that it will flow freely. The hoist is mounted on any overhead bridge crane that may be in service and is operated from the crane cab. Capacity of the hoist is 1000 lb. at 105 ft. per min. With fingertip control, one operator can slice coal all day where formerly several men were needed to operate crowbars, sledges and shovels and in some cases, too, elaborate thawing ovens or torches.



# Producing

## Frangible Plastic Bullets

**T**HE 0.30 caliber molded plastic bullet, developed by the combined efforts of the Bakelite Corp. and Duke University, is composed essentially of lead powder with a plastic resin binder. The molded bullet is sufficiently strong to withstand the shock of firing, but disintegrates into a fine, harmless powder upon hitting the target plane, a specially prepared Bell Aircraft P-63 Kingcobra fighter. The target plane is equipped with several electronic pickup devices which automatically record the gunner's hits and instantaneously signal him when he is "on target." The plastic bullet and sighting devices are so designed that the lessons and techniques learned by the gunner during this training are directly applicable to combat gunnery using the standard 0.50 caliber combat ammunition. Not only is this program of inestimable value to the bomber gunnery men, but it is of considerable help to the fighter pilots in overcoming the feeling of being shot at in the target planes.

It is well known that there is no such thing as an "easy job" until the know-how is obtained. The realization of the production requirement for the molded bullet has been no exception to this, and the story of the important part played by the tools and equipment in the accomplishment of these requirements is quite interesting. The splendid cooperation given to the program by the plastics molders and tool makers is evidenced by the fact that five months from the time that the commercial molders were first called together to discuss the mass production of the plastic bullet, over 50 multi-cavity molds had been constructed. This represented a total capacity of approximately 3300 cavities, and at this time production of the molded slug had attained a peak of over 30 million per month for the industry. This accomplishment like many others in the field of plastics, has been possible because of the technical skill of the metals in-

*... Problems in the manufacture of the transfer molding dies for the lead powder-Bakelite breakable bullets used in training aircraft gunners are described by the author who was responsible for the development of the tools and equipment when he was research engineer of the Bakelite Corp. Success of this heretofore secret gunnery training device and the concurrent training program is largely due to the efforts of Maj. Cameron Fairchild of the U. S. Army Air Forces Training Command.*

dustry and those engaged in the fabrication of tools and equipment.

Fortunately, when the go-ahead signal was given for mass production, the molding material, molding technique and fundamental principles of mold design had already been established by the Bakelite Corp. A small seven-cavity production mold of the transfer type had been designed by the writer during his active association with the project, and one mold of this design was constructed and installed in the Bakelite Research and development laboratories at Bloomfield, N. J., for trial and evaluation several months prior to the initiation of mass production by the industry. This mold design was the result of a very careful and exhaustive study of all possible designs and methods of molding the plastic bullet to meet the required specifications. The fundamental principles involved in this original design have been used almost exclusively in the construction of all the production molds now being operated throughout the industry in this program.

### Mold Design

Fig. 2 illustrates schematically the general type of semi-automatic mold used in the production of the frangible bullet. In most installations the mold is in the form of a subpress assembly having a top platen and "force," an intermediate platen with transfer pot and sprue plate, and a bottom platen with a cavity retainer plate and cavity inserts. All three platens are cored for steam heating. These three major

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components of the subpress assembly are located relative to each other with the aid of guide pins, and the entire assembly is mounted

in a vertical type, bottom ram press.

The novel feature of this design is in the sequence of movement of the various components on closing and opening of the press. In order to attain the semi-automatic feature, it is necessary that on closing, the intermediate platen remain stationary until the cavities close against the sprue plate if powdered molding material is being used. The mold is charged and then the intermediate and bottom platens move up together against the stationary force plunger thus extruding the material into the cavities. If preforms of molding material are used, then the pot may be charged with material before the closing of the press is begun thus eliminating the necessity of stalling the press to load the mold.

Since it is not possible to provide ejector pins for ejection of the molded bullets from the cavities because of the necessity for an extremely smooth surface finish on the ogival section of the bullet, it is imperative that the intermediate platen remain absolutely stationary upon opening the press until the cavities strip off the molded slugs which are held to the under side of the sprue plate of the "pinched" sprue. As the press continues to open, a collector is inserted under the suspended bullets, and, when the stripper bolts finally contact the inter-

mediate platen, the cull and sprues remain on the stationary force with the sprues breaking at the "pinch," allowing the bullets to fall clear and be caught in the collector. After the mold is fully opened, the cull is then knocked off the dovetail holding slots in the under side of the force, and the mold is then ready for another cycle.

The required relative motion of the major mold components is accomplished simply by mounting slotted friction plates rigidly to the top platen, and installing adjustable friction devices on the intermediate platen. The friction device is merely a bronze washer held tightly against the friction plate by means of a heavy coil spring and cap screw aligned in the slot and threaded into the intermediate platen as shown in Fig. 2.

There are three popular arrangements of the cavity inserts. These are circular, square and hexagonal with the number of cavities varying from 37 to 100 for the various multi-cavity production molds now in operation. The force, pot and sprue plate are made either circular, square, hexagonal or in combinations depending upon the design and disposition of the cavities. The hexagonal arrangement of the cavities with a sprue plate approximately  $\frac{1}{2}$  in. thick is very rapidly becoming the most popular design since it has a slightly higher efficiency of material utilization. However, the square arrangement can be made comparable in efficiency in large molds. One commercial molder is successfully producing the molded bullet using Lauterbach press equipment with small five-cavity

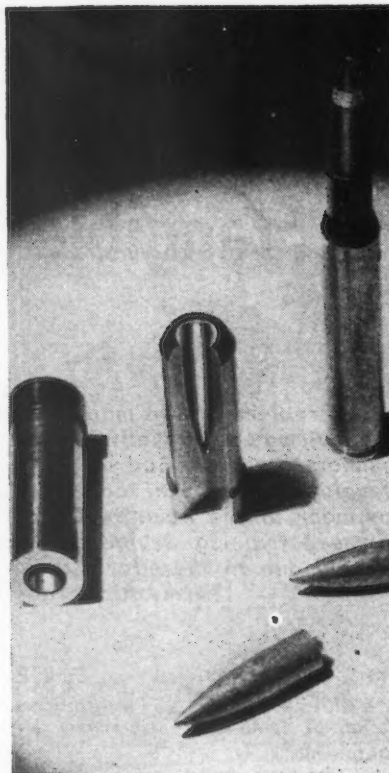


FIG. 1—Plastic molded bullet and completed round used in training aircraft gunners. Cutaway shows section of hobbled die.

transfer molds. This installation has a high efficiency of material utilization.

In the majority of installations, the cavities in which the bullet is molded were hobbled into the cavity insert, after which the insert was rough-finished, hardened and then ground

to size on the external dimensions.

A circular cross-section cavity insert cut away to expose the hobbled cavity can be seen in Fig. 1.

### Hobbing Tool Steel Dies

Hobbing is a process whereby a cavity of the desired shape is formed in a piece of metal by forcing a hardened steel hob of the proper dimensions into the block of cold metal to be shaped. This is done in either a mechanical or a hydraulic press. In general practice, the cavity block is usually a soft low carbon steel which may be case hardened after hobbing and finishing to obtain the necessary wearing qualities and resistance to localized indentation during the molding operation. In the case of the bullet cavity inserts, however, it was found necessary to use an oil-hardening tool steel in order to attain the required dimensional tolerances on the completed cavity, since the steel used must possess a high degree of dimensional stability during heat treatment or the effectiveness of the hobbing technique in producing consistent duplicability of dimensions from cavity to cavity is nullified.

The use of a tool steel for the cavity insert considerably increased the hobbing difficulties. A technique was finally developed, however, in which the cavity was hobbled in several stages with subsequent annealing between steps to alleviate the work hardening resulting from the severe plastic deformation of the metal during the sinking of the hob. The development of this phase of the frangible bullet tooling was pioneered and perfected by John Hohl of the Newark Die Co. and his associates.

### Cavities Chrome Plated

Quite early in the experimental program it was ascertained that the particular molding material which had been developed for the molded plastic bullet exhibited a severe tendency to adhere to the unprotected polished steel mold surfaces, thus seriously impeding the proper semi-automatic functioning of the molds. However, through the extensive co-operation of W. A. Crowder of the Industrial Hard Chromium Co. and his staff, methods were developed whereby the various parts of the molds such as the force, pot, sprue plate and cavities could be precision hard chromium plated. This not only eliminated the sticking difficulties, since this material like most other plastics, does not seriously adhere to hard chromium, but it aided materially

(CONTINUED ON PAGE 128)

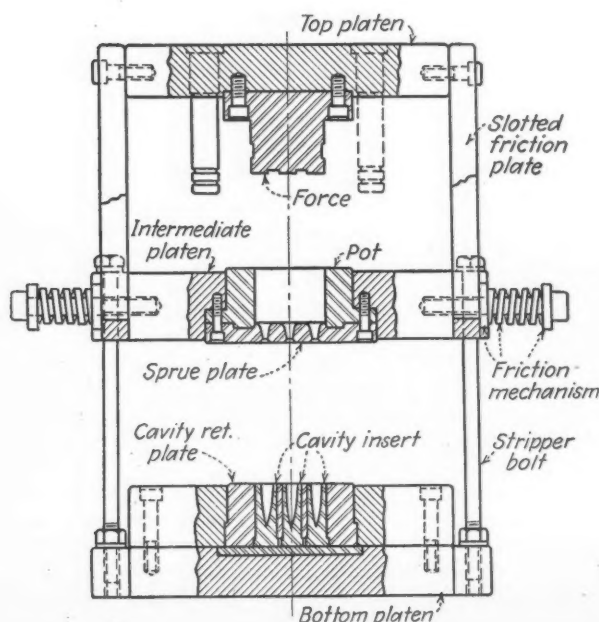


FIG. 2—Schematic diagram of multi-cavity frangible bullet mold construction.



# Conveyorized Welding Of Hardenable Steel

**... Requirements for mass production of grousers or treads for the amphibious "Water Buffalo" have been met by the installation of a conveyor line with eight welding stations. Passing the tack welded assemblies first through a preheating furnace solved the problem of holding the preheat temperature within a narrow range, best suited for N-A-X 9130 high tensile steel.**

**T**HE versatility of the "Water Buffalo," officially designated as LVT (Landing Vehicle Tracked), in negotiating various types of terrain is due to the tracks which keep it moving through water, over land and up mountains. These tracks are part paddle and part tread and are called grousers. When the amphibious vehicle hits the water, the grousers act like a paddle wheel, whereas on land they dig in and pull the vehicle along. Dozens of these grousers are attached to two tracks, one on each side of the vehicle in the manner of a caterpillar tread.

The tank itself is manufactured by the Food Machinery Corp. in Riverside and San Jose, Cal., and in Lakeland, Fla., while the United States Spring and Bumper Co. was assigned the task of making the grousers. Because of the tremendous importance and need for this type of landing barge in the invasion program of the war and the large numbers of grousers required per vehicle and for replacement, rapid production was most essential.

The complicated shape, the material from which the grousers are made, the means of welding the shapes together, and other steps in the manufacturing operation were part of the production problems which confronted engineers at U. S. Spring. The accompanying photographs and tables illustrate how these problems were worked out successfully with an efficient and high rate of production.

Fig. 1 shows the two  $\frac{1}{4}$  in. plates welded together at 90 deg. The length of the base plate is  $13\frac{1}{2}$  in. and the width of the curved section is  $3\frac{3}{4}$  in. There is approximately 36 in. of fillet welding extending completely around the curved plate, with the exception of two small skips to allow bolts to fit into place. The weld specified is a  $\frac{3}{16}$  in. continuous bead using AWS type E6013 mineral coated electrodes. The grouser is preheated before weld-

ing and is heat treated after welding, descaled and coated with a primary coat of zinc chromate. The base plate, after

welding, heat treating and shot blasting, must be flat to  $\frac{1}{32}$  in. Material used for this plate is N-A-X 9130, which is a heat treatable alloy steel furnished by the Great Lakes Steel Corp. containing approximately 0.30 per cent carbon, 0.60-0.70 manganese, 0.60-0.90 silicon, 0.50-0.65 chromium and 0.05-0.15 per cent zirconium, with sulphur and phosphorus in the usual range.

Some of the factors which have been taken into consideration can thus be readily seen. First, there is the welding of the complicated shape involving locked up stresses in the weld. Secondly there is the metallurgical problem of arc welding a 0.30 per cent carbon self-hardening alloy steel. A heat treating factor and resulting warpage, plus additional warpage from a descaling operation, also enter as production problems.

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A study of modern welding methods proved that the greatest speed and efficiency could be achieved through modern continuous

methods of manufacture. Manpower shortage was also an important factor in deciding upon this method of operation. So, a conveyor system of welding, heat treating, descaling and painting was worked out that provided high speed production, decreased the necessary man hours, brought to a minimum the time elapsed between the start of the operation and the final finished product, and resulted in a uniformity of the product.

## Preliminary Tests

The method of manufacture having been decided upon, it was then necessary to make a thorough study of metallurgical factors in order to guarantee this uniformity of product. First, it was vitally important to select an electrode which would give sound, crack-free weld deposits and would be acceptable for welding on a conveyor line. A test was therefore

**FIG. 1**—The grouser for the "Water Buffalo" is fabricated by arc welding a hot formed section of N-A-X 9130 high tensile steel to a flat plate of the same material.

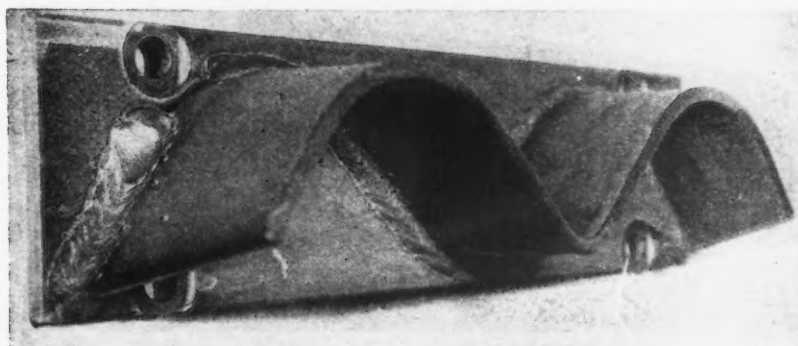




FIG. 2—Tacking of the curved section of the grouser to the flat base plate.

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FIG. 3—Setup man assembling grousers on opposite side of table shown in Fig. 2

conducted as follows: Two  $\frac{1}{4}$  in. plates were placed together in the form of a T and a fillet weld was run along each side. After welding, the various assemblies were carefully cut apart at intervals of approximately  $\frac{1}{4}$  in. and inspected for auto-cracks, fusion zone cracks, porosity, depth of penetration, slag inclusions at the root of the weld and the formation of crater cracks at the finish of the pass. Two electrodes which appeared to give the desired results were selected.

The next factor to be considered was the proper preheating temperature. After careful study of the problem, the "single bead" test was decided upon as a means for selecting this temperature. Strips of the material to be welded were secured and a single bead was laid on these strips which were preheated to 200, 300, 400 and 500 deg. F. respectively. Data were recorded for burn-off rate, electrode used per inch of weld, depth of weld penetration, cracks, porosity, maximum hardness in heat-affected area, and the weld ductility. The materials used in this test were Fleetweld 7,  $\frac{3}{16}$  in. electrode and N-A-X 9130  $\frac{1}{4}$  in. steel plate. The machine setting was 160 amp., 22 volts. Results of this test are given in the table. The conclusions drawn were that the 500 deg. preheat would be most satisfactory as it gave a low hardness of the metal being welded with increased ductility. It also appeared that a slight saving in electrode would be obtained.

An extensive series of tests were made to compare the use of  $\frac{3}{16}$  and  $\frac{1}{4}$  in. electrodes with the conclusion that the  $\frac{1}{4}$  in. electrodes would increase production by 20 per cent, though more weld metal would be deposited. The larger electrode would also save over 6000 man hours in filling the original contract, it was estimated. However, the larger electrode produces a fillet slightly larger than required and hence was not used.

#### Welding on Conveyor

Material is processed in the following manner: From the steel yard the steel is moved to a blanking press. There, both the curved upper part and the base plate are blanked. Holes in the base plate are punched simultaneously with the blanking operation. From the blanking press, the base plates are taken in large quantities to the start of the welding operation. The upper plate is moved to a hot forming press where it is curved and stamped with a designating symbol of the United States Spring & Bumper Co. Then these plates are also moved to the welding lines.

At the starting point of this line, a tack welder is placed between both welding conveyors. Opposite him sits a setup man who places the two parts into a tacking jig and then turns the tacking table 180 deg. so that it is now in front of the tacker, who performs the tacking operation and removes it from the jig (See Figs. 2 and 3). While he is tacking the part, the setup man is assembling a new grouser on the opposite side of the table which is again rotated 180 deg. when the first piece has been tacked. The grousers are now ready to be placed on the welding conveyor.

A man is placed at the start of each continuous welding conveyor to place the grouser on the line. At the same time he puts small plugs into two of the holes in the base plate where the weld metal comes in close proximity. This is necessary because bolts having a specific clearance are later placed through these holes to assemble the grousers on the track. Each grouser is also painted on the base plate with a lime wash. This is to prevent the adhesion of the spatter from the weld. The parts now move into the preheat furnace or zone, Fig. 4.

The preheat furnace is a rectangular box covering the conveyor for a distance of 12 ft. and is approximately 36 x 36 in. in cross-section. Along the walls of this preheat chamber small gas burners are inserted through holes. These are fed with low pressure natural gas. As the grousers come out of the preheat chamber their temperature exceeds 500 deg. F., but as they continue to

(CONTINUED ON PAGE 130)



FIG. 4—Tacked grousers being carried through preheat furnace on continuous conveyor prior to welding.

#### Single Weld Bead Test for the Determination of Proper Preheat Temperature for Welding Grousers of NAX-9130X Steel

Preheat temperature, deg. F.....	200	300	400	500
Burn-off rate, in. per min.....	8	8½	8	8
Electrode used per inch of weld, in.....	1	1¼	¾	¾
Depth of weld penetration, mm.....	1½	2	2	1½
Cracks, porosity, etc.....	None	None	None	None
Maximum hardness in heat-affected area, Rc.....	44	35	37	34
Weld ductility: Bend on 1 in. pin, deg.....	84	96	98	180

Electrode used: 3/16 in. Fleetweld 7.  
Machine settings: 160 amp.; 22 volts.

FIG. 5—Five of the eight welding stations at each of which a small pass of welding bead is laid out. Welding is done along the conveyor for a distance of 32 ft.





# Lead Coated Steels

## Appraised

**... An investigation of the virtues and limitations of lead coatings on steel, and the possibilities of substituting them for terne and galvanized materials. Also described is an efficient method of stripping lead and lead-alloy coatings.**

**A**T the instigation of the Office of Production Research and Development of the War Production Board, the Battelle Memorial Institute in June, 1943, was designated to investigate lead coating of steel by electrodeposition and other methods and to evaluate the quality of such coatings. Identified as project NRC-533, the following is an abbreviated account of the experimental work and conclusions of this investigation.

Atmospheric corrosion tests of relatively short duration show initial corrosion of electroplated lead on steel of two types which appear to be determined by atmospheric conditions. The lead coating either darkens in appearance or acquires a film of a white corrosion product. The next stage in atmospheric corrosion involves the appearance of pinhole rust spots which either disappear or merge into appreciable areas of rust. The present condition of the atmospheric exposure panels leads to the following conclusions:

(1) The lighter electro and hot-dipped coatings (less than 0.00025 in.) afford very short-lived protection to steel exposed to the atmosphere.

(2) There is no significant difference between the behavior of electro-lead coatings deposited from the two commercially available (sulfamate and fluoborate) baths investigated.

(3) The number of pinholes in the coating, which appear as rust spots on exposure, is dependent largely on the coating thickness, thinner coatings showing more pinholes for a given time of exposure.

(4) In industrial, semi-industrial, and seacoast atmospheres, a copper undercoat retards the initial appearance of rust spots in the lighter coat-

ings, although in the rural atmosphere at State College, Pa., the copper undercoat appears to be detrimental.

(5) The effect of a copper undercoat is independent of its thickness within the limits investigated (15 to 85 millionths of an inch).

(6) Pores in the lead coating tend to plug with corrosion product and disappear on continued exposure in the semi-industrial atmosphere at Columbus, at a minimum coating thickness of 0.0005 in. At greater thickness, initial porosity appears to be definitely harmless and at lower thickness the pinholes spread rather than disappear. Data from panels exposed in other types of atmosphere are inconclusive on this point to date.

(7) Neither electro nor hot-dipped lead on terne plate having a coating thickness of 0.00025 in. or less affords the equivalent in atmospheric protection to steel of commercial hot-dipped or electro-zinc. At what thickness of lead and of zinc the same degree of protection can be obtained cannot be determined at the present stage of the tests.

The atmospheric tests, with the exception of those at Columbus, are being continued under the auspices of ASTM, Committee B-3. The above conclusions (4, 5 and 6 particularly) are subject to revision on the basis of the results of more extended exposure at New York, N. Y., State College, Pa., Kure Beach, Wilmington, N. C., and Tela, Honduras. Conclusions 1, 2, 3 and 7, above, will probably not be altered by subsequent results.

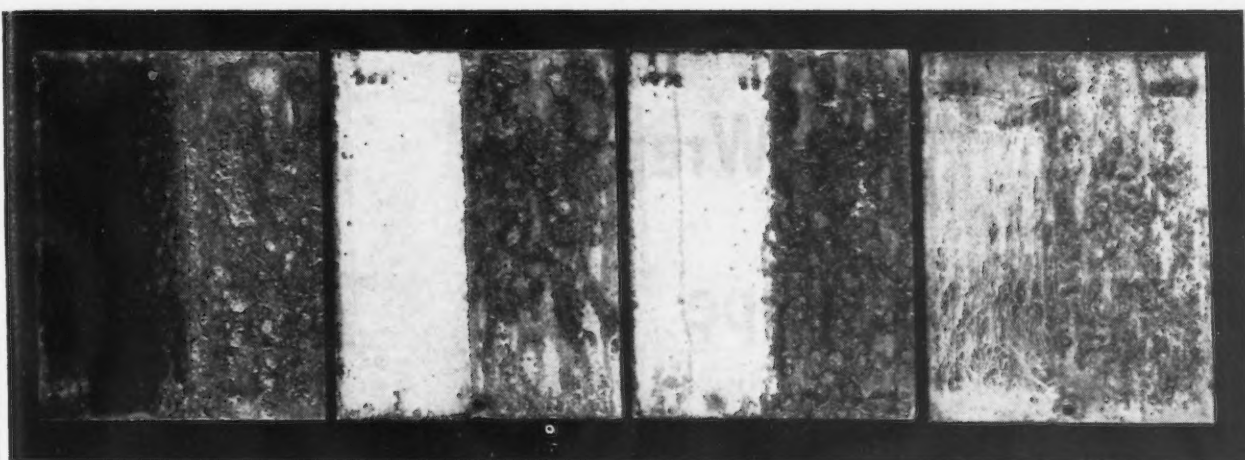
A number of the panels were subjected to salt spray at 95 deg. F. and at controlled fog density. Failure was considered to have been reached when rust spots were visible at arm's length.

The hot-dipped coatings failed in the same length of time as the 0.000085-in. electro-lead deposits. Under 0.000085 in. of electro-lead, copper plate did not appear to aid in resisting salt corrosion. Cold reduction did not appreciably increase resistance to salt corrosion. Electro-terne appeared to corrode more rapidly than electro-lead of the same thickness. The resistance to salt atmosphere corrosion of 0.00025, 0.0005, 0.001, 0.002-in. electro-lead deposits is increased by a copper undercoat. Early failure of heavy lead deposits may be laid to imperfections in the surface of the basis metal.

The wax coating (molten Cercon wax, Petrowax, and Petrowax and Dutrex) on the lead deposit ultimately failed in the salt spray cabinet after 2350 hr. Wax coatings obviously greatly increased resistance to salt atmospheres.

A group of panels were subjected to a controlled humidity test. There was indicated increased rust resistance for lead with a copper undercoat in humid atmospheres. Deposits of more than 0.0005 in. of lead, although heavily coated with white corrosion product, showed considerable resistance to rusting in this type of atmosphere. The hot-dip coatings, terne and tin-antimony-lead, showed remarkable resistance for the thickness of the coatings. The alloys did not form the white corrosion products. An odd panel, one-half of which was dipped in molten Cercon wax, definitely indicated the advantage of wax. Two scratches visible in the waxed area were under the wax, and corrosion started in these scratches and traveled to just beyond the wax boundary and stopped. Cold rolling greatly retarded the appearance of rust.

Of the available methods of measuring porosity, the electrographic technique was considered to be the most suitable. The method was developed at the Bell Telephone Laboratories and involves anodic solution of the base metal with simultaneous polarization of the coating. It has been used successfully for the detection of



0.00025 in. Lead,  
Petrowax and Dutrex

0.0005 in. Lead,  
Petrowax

0.00025 in. Lead,  
Petrowax

0.0005 in. Lead,  
Cercon

**SALT** spray cabinet tests for lead coated steels treated with wax. Duration of test, 2352 hr.

porosity in a number of coating systems, although application to lead coatings on steel has not been fully explored.

Panels were subjected to this test. In general, porosity decreases with increasing coating weight. The panel with 0.0005 in. of fluoborate lead on bare steel showed more pores than would be expected in view of the other results.

The tin-antimony-lead coating is much more porous than theterne in spite of its greater thickness. Stripping revealed the steel under this alloy to be deeply and non-uniformly etched, whereas the steel surface under theterne coating was lightly etched and uniform.

A large difference in porosity between the 0.000085-in. and the 0.00025-in. electroplated lead coatings as shown by this test was also apparent in the atmospheric corrosion tests with identical panels.

Cold rolling has been considered as a possible means of reducing the

porosity of lead coatings. Panels plated with 0.0005 in. of fluoborate lead were cold rolled and tested for porosity and for salt-spray and humidity resistance. Cold rolling reduced the size and number of pores in the coating, particularly in the case of the plates directly on bare steel. The effect is less pronounced with the copper undercoat.

The fusion of electroplated lead was investigated briefly as a possible means of decreasing porosity. Panels plated with varying thicknesses of lead were immersed for short times in a mineral base tinning oil (palm oil substitute) over a range of temperatures above the melting point of lead. In every case a certain amount of de-wetting occurred. Although less severe on panels with a copper undercoat, none of the samples were considered satisfactory for corrosion testing.

Several methods of removing lead and lead-alloy coatings were investigated. These included, (1) a 20 to 30 per cent solution of caustic soda, saturated with potassium chromate, cold and hot chemical strip, (2) a dip in an aqueous solution of sulphuric acid and hydrogen peroxide, (3) a solution of sodium hydroxide, sodium metasilicate, and Rochelle salt for anodic stripping. The latter was found to be the most satisfactory for both the hot-dip alloys and electro-lead coatings. It contained:

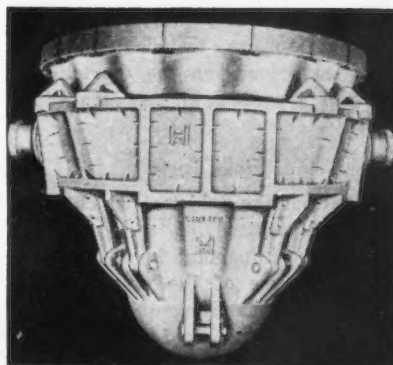
	Grams Per Liter
Sodium hydroxide	100
Sodium metasilicate	75
Rochelle salts	50
Temperature, 180 deg. F.;	
anode current density, 20 amp. per sq. ft.	

This method did not attack the steel and left the specimen clean. The other methods failed to remove the tin-lead alloy and the tin-antimony-lead alloy. The sulphuric acid-hydrogen peroxide solution attacked the steel.

## Improved Type of Cinder Pot

**SHOWN** here is the Johnston corrugated cinder pot with the new expandable rim which serves to maintain the top of the pot in a true circle and prevent distortion. The tell-tale expansion joints in the rim indicate when the pot may be handled without danger by trunnion, bail ring or lifting lugs.

This pot, said to be the largest of its type ever manufactured, is used primarily in open hearth operations, but is adaptable to all iron, steel and nonferrous smelting plants. The



cinder pot as shown, complete with supports weighs 44,000 lb. and the lifting ring weighs 15,000 lb. The pot is 10 ft. 9 in. high, is 11 ft. in diameter at the top, and has a capacity of 400 cu. ft.

The pot, manufactured by the Mackintosh-Hemphill Co., Pittsburgh, is corrugated to provide unrestricted expansion and contraction and quicker cooling of the slag. These pots may be provided with a copper coating in the bottom section to provide easier dumping and skulling.

# Testing Wire Wrapped Steel Pipe

**... Although wire wrapping has been used for some time to strengthen pipe, tests under OPRD guidance were made to determine whether this practice could be advantageously applied to steel pipe intended for pipeline use. These tests, conducted on 120-ft. lengths of 24-in. diameter steel pipe, included field tests to discover its reactions to handling and pressure tests. Described herein are the procedures used in winding the wire in addition to details of the various tests and their results.**

UNDER the auspices of the Office of Production Research and Development of the War

Production Board, tests were conducted on light weight, high pressure, wire wound steel pipe in order to determine its bursting strength when wound with wires at various spacing along its length, and also to discover whether such pipe could be handled in the field without experiencing undue damage.

Basic material was 24-in. diameter, spiral welded, steel pipe with a wall thickness of approximately 0.14 in. This basic pipe was strengthened by wrapping with 13-gage spring steel wire (approximately 0.092 in. in diameter), and the ends of each section of pipe were reinforced so that the sections could be welded together.

The apparatus for winding the 40-ft. lengths of pipe had to be quite different from that used in winding the shorter pipe lengths. Considerable difficulty was experienced in locating a lathe large enough to wrap a section of 24-in. pipe, 40 ft. long, and it was necessary eventually to make a special tailstock for a lathe with a bed about 35 ft. long.

The tension mechanism was completely redesigned in order to produce greater tension on the wires. For the shorter pipe lengths, the tension mechanism depended on friction between the wire and some plates, and was controlled by means of springs which pressed the plates against the wire, together with a reel mechanism with some counterweights. This mechanism wound 16 wires simultaneously. The

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Foundation, Columbus

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new mechanism handled only five wires at a time and, while the same plate and roll mechanism was used to give some tension, this was supplemented by a drum approximately 24 in. in diameter, used as a snubbing drum for the wire, that is, this drum was locked and the wire being wrapped made one complete turn around the drum before going into the guiding mechanism. There was no way of measuring the tension introduced into the wire by this mechanism, but a pull on the wire indicated that it amounted to considerably more than the pull on the old mechanism. The lathe had been arranged with a brake so that the tension could be held on the wire while the pipe was not rotating.

The wire was led from swift type reels mounted on a rack and the ends of the wire were fastened onto the collars of the pipes to be wrapped by means of clamps. The wires were brazed to the collars before wrapping was started.

It is probable that this pipe could be manufactured commercially without any serious technical difficulty which experience on the shorter sections of pipe had already tended to indicate.

## Field Tests

A part of the field test which could not be supervised but the results of which have important implications in the actual use of the pipe was the shipping and handling of the pipe in getting it to the field test location. The three sections that were prepared

for the field tests were shipped from Oklahoma City, where they were wrapped, to Indianapolis by truck, rail and truck again. The final truck, which was being used to haul pipe for the Products Line now being built, was operated by a crew familiar with pipe-handling methods. The pipe was unloaded from the truck by rolling it off onto the ground which was rather soft at the place where the field tests were to be made. An inspection of the pipe after it was unloaded and before it was welded, showed that there were quite a few dents in the thin-walled part of the pipe and that the ends of the pipe were somewhat oblong rather than round. These damages must have occurred during shipment. Since the collars were made of ½-in. thick metal, this distortion of the ends could just as easily have occurred to standard pipe as to the thin-walled pipe.

The three sections of pipe were welded together electrically in the field. In this operation it was necessary to make the ground connection for the welder on the outer surface of the pipe and then turn the pipe. While this was being done, two of the wires were burned off because of extremely heavy current concentrations going into the ground connection. It is probable that this difficulty could be eliminated if special arrangements were made for fastening the ground connections onto the collars of the pipe. Unless special connectors were made, however, this would be extremely difficult. During welding the sections of pipe were handled by means of a chain sling attached to the shovel on the boom of a back hoe.

The field tests proper were made to determine how this piece of pipe, which after welding was 120 ft. long, would react to handling. First, a ditch 135 ft. long and 6 ft. deep was dug beside the pipe. Since the place chosen for making the tests was rather low, this ditch had about a foot of water in it during the tests. After the ditch was completed, one end of the pipe



was lifted by looping a chain around the pipe and fastening this chain to the boom of the back hoe. Reference marks were made along the pipe at various distances from the end and, after the end was raised, vertical measurements were made to these reference points to determine the deflection of the pipe. The curve in Fig. 1 shows this pipe deflection and indicates that the 120-ft. section was deflected approximately 5 in. from a straight line at the center. This did not damage the pipe in any way. The end of the pipe was then laid down and the chain loop placed around the center of the pipe, this then being in the middle of one of the wire-wrapped sections approximately 20 ft. from the collars. The pipe was picked up by this loop until both ends were off the ground and it was noted that the chain apparently did not damage the surface of the pipe and that the pipe could be handled in this way.

Following this demonstration, the pipe was laid in the ditch by first carrying one end of the pipe over the end of the ditch and laying it on a skid, and then carrying the other end over to the ditch and laying it in the bottom of the ditch. The crane then returned to the first end of the pipe and picked the end up so that the skid was removed and the pipe lowered into the trench.

Since the ground was extremely soft, some dirt had caved into the trench so that the pipe was not lying flat on the bottom but was so bent

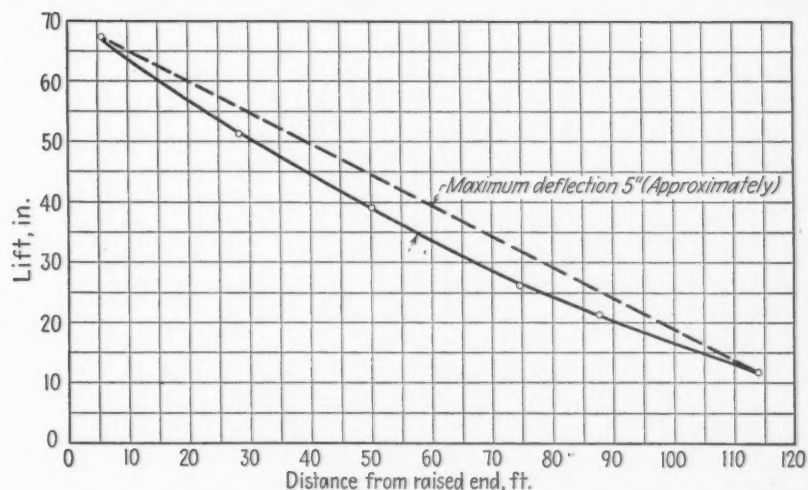


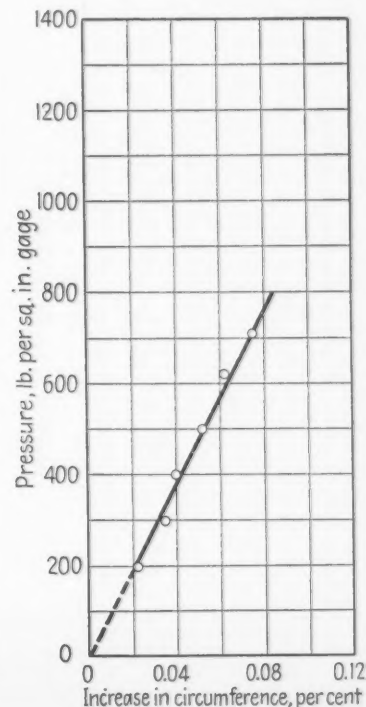
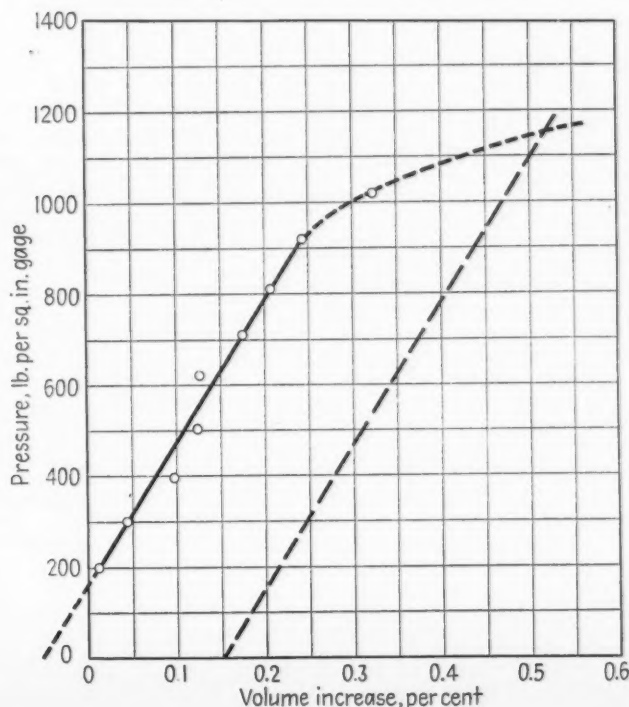
FIG. 1—In testing the 120-ft. length of wire wound steel pipe in its reaction to handling, one end of the pipe was lifted by looping a chain around the pipe and fastening this chain to the boom of the back hoe. Reference marks were made along the pipe at various distances from the end and, after the end was raised, vertical measurements were made to these reference points to determine the deflection of the pipe. The curve shows this pipe deflection and indicates that the 120-ft. section was deflected approximately 5 in. from a straight line at the center.

that one end was about 6 in. up from the bottom of the trench. The trench was then back-filled to cover about 60 ft. of the pipe on the end which was lying flat in the trench. After back-filling, the crane was run up and down on top of the backfill, and observations were made of the conditions of the pipe while the crane was running on top. The crane weight was approximately 20 tons, so that the load on top of the backfill was about 10 tons on a Caterpillar tread about

8 ft. long. This had no apparent effect on the pipe and it was concluded that the pipe had sufficient strength to withstand any outside pressure which would be applied during any normal construction.

The crane was then hooked onto the end of the pipe which was not under the backfill and this end was pulled up. The pipe bent normally until the free end had been raised about 2½ ft. when it was apparent that the pipe wall had collapsed because the

FIG. 2 — Stress-strain diagram of sample No. 9 which was tested without restrained ends. The curves on the left are based on the increase in volume while those on the right are based on the increase in circumference. The change in volume was corrected for compression of the water and longitudinal stretch of the pipe, but the indicated yield point of 1150 lb. is probably somewhat low since the correction for longitudinal stretch could not be accurate after the yield point of the material was passed.



**TABLE I**  
Hydrostatic Tests of Wire Wound Steel Pipe, Section No. 6, Ends Restrained  
5.33 Wires per In. Approximate Pitch, 0.19 In.

Pressure Lb. per Sq. In.	Volume Increase, Per Cent	Circumference Increase, Per Cent	Remarks
000			
13	0.00	0.000	
105	0.164	0.017	
205	0.220	0.039	
303	0.245	0.056	
406	0.315	0.079	
507	0.357	0.096	
610	0.389	0.131	
710	0.444	0.144	
815	0.507	0.188	
915	0.626	0.280	
970	0.706		1 wire broke next to brazed repair.
1020	0.864		2nd wire broke same place.
1070	0.864		2 additional wires broke.
970			Pressure dropped to this value.
990			Additional wires broke.
760			Leak in spiral weld.
865			Failed by opening large leak in plate of tube.
845			

Initial Volume of Water 18,060 cu. in.  
Initial Volume of Pipe 33,120 cu. in.  
Initial Circumference 76.2 in.

angle of bending had changed completely. Following this test the material on top of the pipe was excavated and the pipe was removed from the trench. The break was found in the wall of the pipe at a point just a little way back of the end of the backfill. This test indicated that if the load on the end of the pipe was too great, it would collapse and make a sharp bend in a manner which would be expected with a thin-walled tube of this type.

From these tests it was concluded that pipe wrapped with wire could be handled in about the same manner as pipe without any wire wrapping.

#### Pressure Tests

Three short sections of pipe were tested hydrostatically in an attempt

to determine the bursting pressure. The test data are summarized in Tables I, II and III. All three had been manufactured with the new type of butt welded collars and one piece, sample No. 9, which was to be tested without restrained ends, had previously been subjected to a pressure of 500 lb. per sq. in. when the end failed before the pipe could be tested. New and stronger heads had been welded on and this pipe was retested with the new heads. Measurements were taken of the quantity of water pumped into the pipe and of the increase in circumference and length of the pipe as the pressure was increased. The pressure in this pipe was brought up to 1410 lb. per sq. in. and measurements were made in one day. The

following day the pressure was again applied until the pipe failed by the tearing of the head from the pipe wall at a pressure of 1440 lb. per sq. in. This tear was in the parent metal of the inner tube, and when the pipe failed the tube tore completely around the circumference. This break was at a tensile stress in the metal of about 61,000 lb. per sq. in. which was very close to the computed longitudinal strength of the pipe. From this test it can be seen that the wire has no effect on the longitudinal strength of the pipe.

The stress-strain diagram for this pipe is shown in Fig. 2, the first being the stress-strain diagram based on the increase in volume; the second based on the increase in circumference. The change in volume was corrected for compression of the water and longitudinal stretch of the pipe, but the indicated yield point of 1150 lb. is probably somewhat low, since the correction for longitudinal stretch could not be accurate after the yield point of the material was passed. However, the curve does seem to indicate that the results of the first tests for the determination of the safe working pressure were accurate. The circumference measurements were not carried to a high enough pressure to indicate the yield point of the pipe. The data taken during this test and the computed results are tabulated in Table III as shown on page 128.

Test section No. 7, which was to be tested with restrained ends and which was a section with all wire on, that is, with the pitch of the wires approximately 0.093 in., could not be tested to destruction because it had sprung a leak at about 300 lb., and the maximum pressure which could be obtained before the leak reached the capacity of the pump was only 1400 lb. per sq. in. (see Table II). This pipe has been forwarded to the American Rolling Mill Co. at Middletown, Ohio, and a report giving the bursting pressure will be made when it is tested with a high capacity pump.

Sample No. 6, having restrained ends and with approximately half the wires removed so that the pitch of the wires was about 0.19 in., was also tested to destruction (see Table I). In welding the head onto this pipe, two of the wires had been burned through and an attempt was made to repair this by brazing the burned ends of the wires to the pipe shell. This pipe first failed at a pressure of 970 lb. per sq. in., when one wire, next to the place where the braze had been made, broke. The second wire

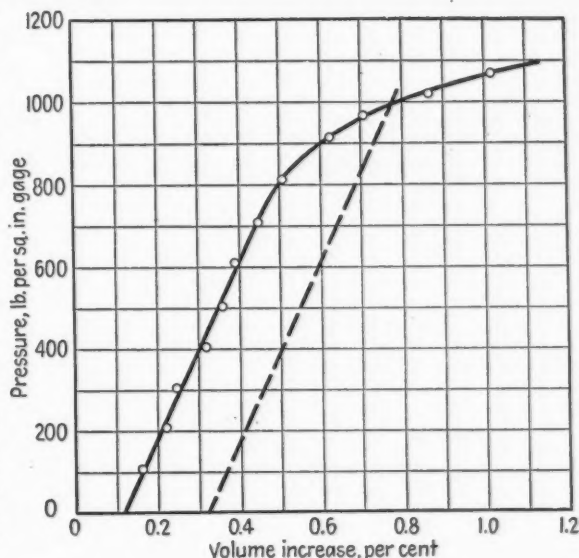
**TABLE II**  
Hydrostatic Tests of Wire Wound Steel Pipe, Section No. 7, Ends Restrained  
10.67 Wires per In. Approximate Pitch, 0.93 In.

Pressure Lb. per Sq. In.	Volume Increase, Per Cent	Circumference Increase, Per Cent	Remarks
109		0.000	
204		0.022	
298		0.035	
399		0.053	
		0.066	Leak developed in butt weld between collar and pipe.
502		0.096	
600		0.105	
710		0.127	
1310		0.133	
1400			Leak equal to capacity of pump.

\* Because of early leak quantity measurements are of no value.

Initial Volume of Water 18,060 cu. in.  
Initial Volume of Pipe 33,120 cu. in.  
Initial Circumference 76.2 in.

FIG. 3—Stress-strain diagrams of sample No. 6, having restrained ends and with approximately half the wires removed so that the pitch of the wires was about 0.019 in. This pipe first failed at a pressure of 970 lb. per sq. in. when one wire, next to the place where the braze had been made, broke. The second wire failed at a pressure of 1020 lb. per sq. in. and the maximum pressure reached was 1070 lb. per sq. in. Following this break the pressure declined and the wires continued to break. Final failure resulted from a large leak in the plate of the pipe at a pressure of about 845 lb. per sq. in.



failed at a pressure of 1020 lb. per sq. in. and the maximum pressure reached was 1070 lb. per sq. in. Following this break the pressure dropped back and the wires continued to break until, after considerable pumping, the spiral weld sprung a small leak at a pressure of 865 lb. per sq. in. The piece finally failed by springing a large leak in the plate of the pipe at a pressure of approximately 845 lb. per sq. in. The stress-strain diagram for this section is shown in Fig. 3. As done previously, corrections were made for compression of the water, compression of the inner tube, and longitudinal stretch of the pipe when the volume increase was measured. It is seen from Fig. 3 that the yield by the 0.2 per cent offset method for both the circumference and quantity measurements would appear to be about 970 lb. per sq. in.

The results of the test made to date to determine the yield point have been plotted against the wire pitch along the pipe in inches in Fig. 4. It is seen that these indicate a yield pressure of approximately 1100 lb. for the wires as close together as possible, dropping to about 800 lb. for a pitch of  $\frac{3}{8}$  in., and that the points fall on a fairly smooth curve. This curve approximates the equation of:

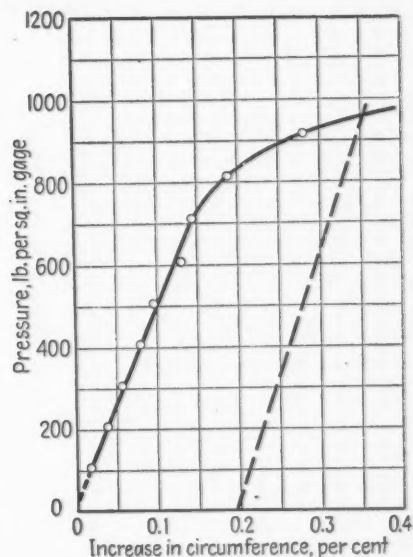
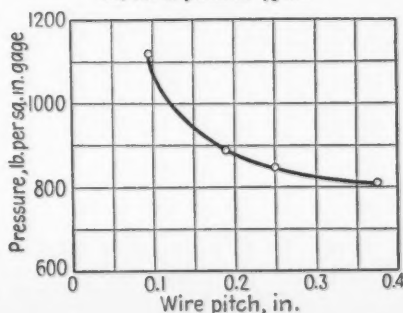
$$P = 675 + 45 \frac{p}{p_0}$$

where  $P$  is the yield pressure of the pipe in lb. per sq. in. and  $p$  is the pitch of the wires in inches. This equation is purely empirical and should not be used beyond the range of the data since it would tend to indicate a yield pressure for the inner tube of 675 lb. per sq. in. which is too high.

These pressure tests taken in conjunction with the previous tests indicate that if leaks do not develop in the pipe, the strength of the pipe is approximately that which would be predicted by computing the strength of the pipe by using Barlow's formula, and substituting in it the proper areas of the wire and tube material, together with the correct tensile strengths, and indicating that this design gives the pipe its strength as predicted. However, a great deal of difficulty has been encountered due to leaks in the spiral weld and in other welds made in the tube. It is probable that these leaks occur because the wire which is not prestressed does not take up the strain before the inner tube itself is strained beyond its yield point. This stressing beyond the yield point tends to open up any small imperfections in any of the welds before the pressure has reached a very high value. It has been sug-

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FIG. 4—Relation between yield point and wire pitch. From this curve, it can be seen that a yield pressure of approximately 1100 lb. is reached in wires wound as closely together as possible. The yield pressure drops to about 800 lb. for a pitch of  $\frac{3}{8}$  in.



gested that it would be well to prestress the wire to a very high degree, so as to cause the inner tube to reach its yield point at the same time that the wire does. If this could be done, it might eliminate some of the leaks which were observed.

One other difficulty which has been encountered is the almost impossibility to determine the exact location of a leak which occurs under the wires and that when these leaks did occur they could not be repaired, since the application of any heat to the pipe would anneal the wire, thus causing it to lose its strength. This difficulty would probably not be so serious if the wires were not so close together.

From the above analysis it would appear that it would be more practical from a use standpoint to manufacture this pipe with a larger wire, spaced a considerable distance apart, so that work could be done on the tube without affecting the wire. But if this were done, the wire would be rather highly prestressed, and it is doubtful whether it would be possible to wind the wire without collapsing the inner tube.

From these tests, the following general conclusions can be drawn:

(1) Pipe can be manufactured by this process which will have considerably greater strength for a given weight than pipe manufactured by other processes.

(2) This pipe can be handled in the field in about the same manner as pipe having the same weight as the inside tube. Wire wrapping has little effect on the handling characteristics of the pipe.

(3) The cost of this pipe will (CONTINUED ON PAGE 128)



# Effect of Delayed Quench on the Strength

**T**HERE is some controversy as to the effects of delayed quenching upon the tensile yield strength of solution heat treated 0.032 in. Alclad 24S-O aluminum alloy sheet. To obtain the yield strength of 37,000 lb. per sq. in. required by government specification one company reports that it is necessary that the quenching be completed in less than 9 sec. after the material is removed from the salt bath; whereas other information shows that the rate of quenching, assuming correct practice is used, is not as important in securing required mechanical properties as is temperature and soaking time.

This investigation was made in view of the above contradictory information. The effect of soaking temperature was not determined as a temperature of 920 deg. F. is fairly well established and accepted for ob-

taining best mechanical properties in this material.

The specimens used in this test were standard tensile specimens cut in the longitudinal, with-grain direction from a single sheet of 0.032 in. Alclad 24S-O, fabricated by the Aluminum Co. of America according to government specification AN-A-13.

The tensile specimens were segregated into four groups representing soaking periods of 10, 15, 20 and 25 min. Each group was further segregated into four groups of three specimens each for quenching delays of 5, 10, 20 and 40 sec.

The specimens were heated in a salt bath with the temperature of the bath maintained at  $920 \pm 2$  deg. F. All of the specimens were put into the salt bath at the same time. At the end of the 10 min. soaking period the 12 specimens in that group were removed from the salt and held over

the quench water. Similarly, three specimens were submerged when 10, 20 and 40 sec. respectively had elapsed. A stop watch was used to time the period between removal from the salt and complete submergence in the quench water. This procedure was repeated with the specimens in each of the other three soaking periods.

When all the specimens were quenched they were removed to a tank of warm water and washed thoroughly. They were then dried with an air blast.

To obtain a fully hardened ST condition of maximum physical properties the specimens were allowed to age for approximately four days. After aging, the specimens were tested for tensile yield, ultimate strength and per cent elongation. This was performed on a tensile testing machine using an autographic stress-strain recorder.

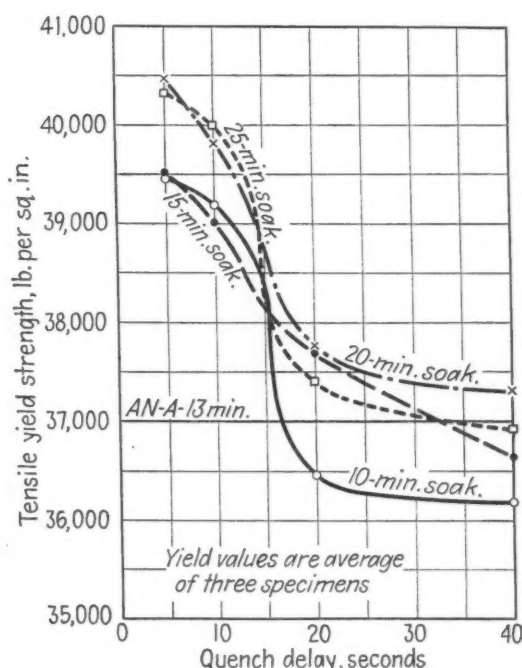


FIG. 1—Effect of quench delay on yield strength of solution heat treated 0.032 in. Alclad 24S-O.

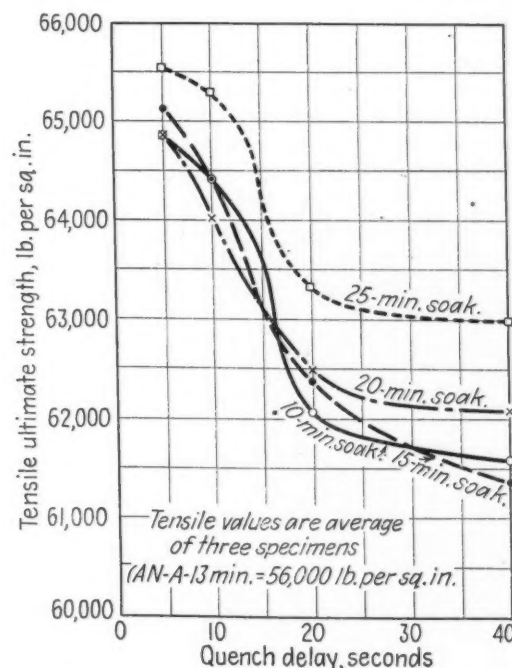


FIG. 2—Effect of quench delay on tensile ultimate strength of solution heat treated 0.032 in. Alclad 24S-O.

# Strength of Alclad 24S-T Sheet

By J. E. DOUGLAS  
Boeing Aircraft Co., Seattle

Four sets of curves were drawn from the tensile test data. Three sets of curves, Figs. 1-3, show the effects of delayed quench upon the yield strength, ultimate strength and per cent elongation respectively for each soaking period. The fourth set, Fig. 4, shows directly the effect of soaking time upon the yield strength for each period of quench delay.

## Discussion of Curves

The curves plotted with yield strengths as ordinates and quench delay as abscissas, Fig. 1, show that the specification minimum yield strength of 37,000 lb. per sq. in. is exceeded when:

- (a) Material soaked for 10 min. is quenched in less than 16 sec.
- (b) Material soaked for 15 min. is quenched in less than 32 sec.
- (c) Material soaked for 25 min. is quenched in less than 34 sec.

The specimens soaked for 20 min.

... Tests indicate that when solution heat treating 0.032 in. Alclad 24S-O sheet at the soaking temperature of 920 deg. F., maximum strength is obtained if the material is soaked for a period of 20 min. and quenched in the shortest possible time. Tensile yield and ultimate strength, and in general per cent elongation, decrease with increase in quench delay for any given soaking period.

did not go below the specification minimum in the longest delay for 40 sec. used in the test.

The curves plotted with ultimate strengths as ordinates, Fig. 2, show values for all of the specimens tested considerably above the specification minimum of 56,000 lb. per sq. in. for all of the quench delays used.

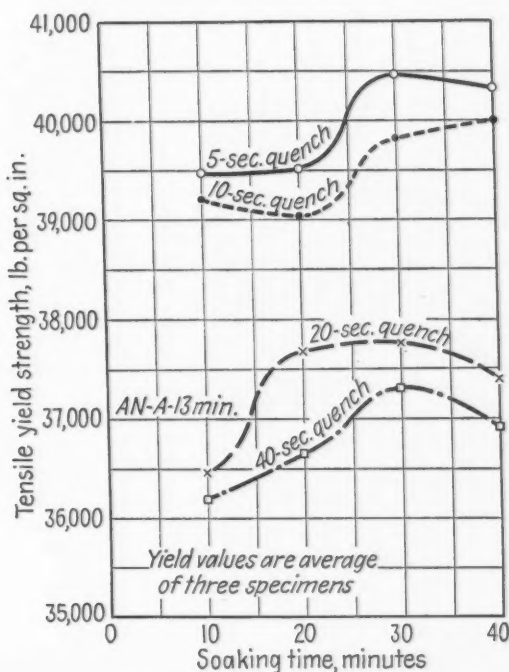
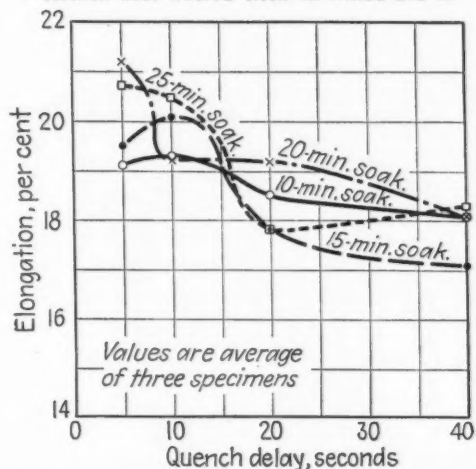
Although the curves definitely indicate that a relatively rapid quench is desirable for maximum mechanical properties, it is also apparent that the quenching rate is not critical with respect to specification minimum requirements. The curves, Fig. 4, with

yield strengths plotted as ordinates and soaking times as abscissas show that maximum strength is obtained with a soaking period of 20 min. Specification minimum requirements were exceeded for all delays of quench when the material was soaked for this length of time. The curves also show that the yield strength drops off for soaking periods longer than 20 min.

The effects of delayed quench upon the corrosion resistance of Alclad 24S sheet was not considered in this investigation.

RIGHT  
FIG. 4—Effect of soaking time on tensile yield strength of solution heat treated 0.032 in. Alclad 24S-O

BELOW  
FIG. 3—Effect of quench delay on elongation of solution heat treated 0.032 in. Alclad 24S-O.



# New Equipment . . .

## Material Handling

. . . Recent developments in cranes, carriers and other conveying equipment and accessories are described in the following pages.

**A**N overhead traveling crane which is said to include full vision for the operator, comfortable sit-down control and air-conditioning has been announced by *Cleveland Crane & Engineering Co.*, Wickliffe, Ohio. The cab is cylindrical in shape. Transparent enclosure panels extend to the floor permitting maximum vision in every direction over the area covered by the crane. The panels are of a plastic which is shatter proof and impervious to certain gases that may be injurious to glass. Hoist and trolley switches are attached to the right and left arms of the chair. The bridge switch is on the floor and is controlled with the right foot. An air-cooled air-conditioning unit for use where temperatures do not exceed 140 deg. is included. Adequate sealing and insulation is provided. A traveling platform serves both as a vestibule to the cab and a means for easy access to the exterior side of the window for cleaning purposes.



### Air Conditioned Cab

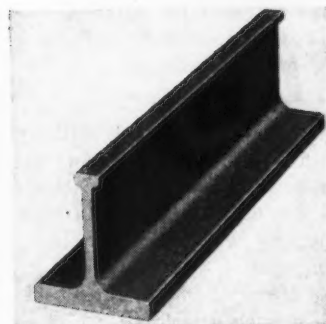
**A**N air-conditioned cab for cranes operating in hot, dusty, smoky or gaseous atmosphere has been announced by *Northern Engineering Co.*, Detroit. It receives approximately one change of fresh, cool, clean air every minute. The cab employs a triple filter—a precipitron unit which takes out the smoke, activated carbon which removes fumes and gases, and mechanical filters which remove larger dust particles. After filtration the air is drawn over a refrigerating coil



which reduces the temperature to an efficient working range. The preferred type is said to be the completely enclosed cab. However, where operation requires an open window a similar effect can be obtained by using larger equipment. In either case, the cab is kept under slight air pressure, so that outside atmosphere cannot leak in.

### Tramrail System

**F**OR use by mass production industries for moving and handling raw stock, parts in process and finished products, a tramrail system has been announced by *Forker Corp.*, 1809 East 47th Street, Cleveland 3. The system consists of several one-piece rolled steel tramrail sections of simple design and heavy construction suitable for various span and load



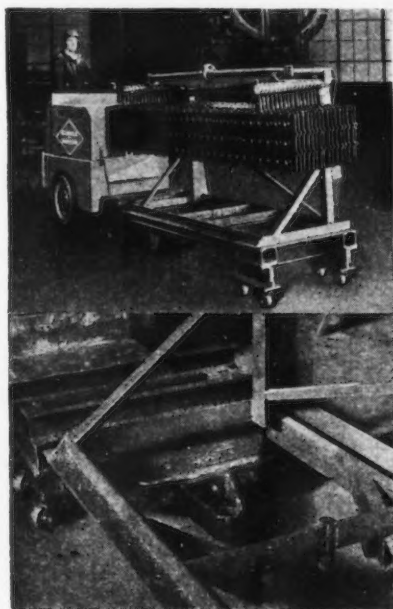
conditions. Trolleys are available for both chain and electric hoists. Monorail switches, cranes and below the hook devices are included. Another feature is "shielded electrification" by which live conductor wires are covered against contact by workmen.

### Overhead Truck Guards

**O**VERHEAD guards for its lift trucks have been announced by *Towmotor Corp.*, Cleveland. When installed, the guards extend in front, over, and behind the operator. Traverse lengths of 1½ in. steel tubing in front and above are notched and are welded to side members of the frame. Back sections of the side frame members are made of 1½ in. standard black steel tubing, while the front sections, which telescope over the back sections, are 2 in. in diameter.

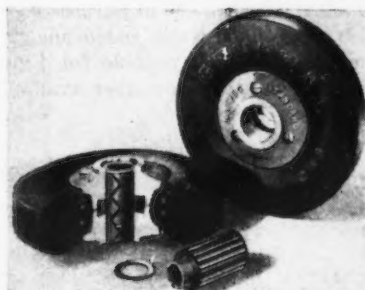






#### Auxiliary Truck Dolly

FOR handling long loads by electric industrial trucks, an auxiliary dolly mounted on casters which can be moved about manually to a limited degree and can also be transported rapidly between various operating departments has been announced by *Elwell-Parker Electric Co.*, Cleveland. The dolly is made by welding flame-cut parts of standard flat rolled shapes. A steel fitting bolted to the forward end of an Elwell-Parker power truck platform provides for a pin connection between the base frame and the truck. The truck lifts only one end of the dolly and can either push or pull the load through narrow aisles and around corners.



#### Air Wheel

AN air wheel with large demountable cushion type roller bearing rubber tires (of aircraft design) has been announced by *Rapids-Standard Co., Inc.*, Grand Rapids, Mich., for use on material handling equipment. The AGH air wheel is available in a size 6 in. in diameter x 2 in. face. It is equipped with roller bearings for free, easy rolling and is available in axle sizes of  $\frac{3}{4}$ ,  $\frac{5}{8}$  and  $\frac{1}{2}$  in. with a

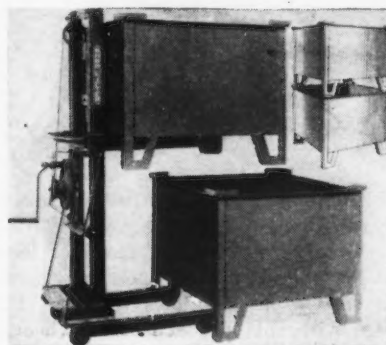
hub length of 2  $\frac{3}{16}$  in. The AGH wheel has a capacity of approximately 250 lb. per wheel. It is held in place by two locking hub plates of magnesium which place the tread of the wheel under tension.

#### Telescopic Towing Handle

THE addition of a telescopic towing handle to its hydraulic elevating table has been announced by *Lyon-Raymond Corp.*, 211 Madison Street, Greene, N. Y. Extended, the handle provides means for moving the table from place to place. Collapsed, the handle is below and under the table top where it will not interfere with the operation involving the transfer of materials across the table or the support of overhanging pieces. Although the table can be easily maneuvered without the use of the handle, it is said that long hauls are made easier by its use.

#### Storage Bin

AN all steel storage bin (stacking type) has been announced by *Palmer-Shile Co.*, 784 South Harring-



ton Avenue, Detroit 17. Corner plates allow for convenient stacking and storage. A four-way entrance permits pick-up from any one of four sides which may be handled with hand or power lift truck or fork truck. It can be tiered with portable elevator, high lift or fork truck.

#### Dump Car

A DUMP CAR, the Junior Phillips Dump, has been added to its line of haulage equipment by *Phillips Mine & Mill Supply Co.*, 2206 Jane Street, Pittsburgh. A hand push model, the dump is 66 in. long, 38  $\frac{1}{4}$  in. high and 24  $\frac{1}{4}$  in. wide. It has a capacity of  $\frac{1}{2}$  cu. yd. and is available with rubber tires only.

#### Barrel Upending Truck

A BARREL and drum upending truck has been developed by *Colson Corp.*, Elyria, Ohio. It is



claimed that it is possible for one man to upend barrels and drums weighing from 500 to 900 lb., an operation which it is said usually takes from two to three men. A feature of the truck is its safety factor. The barrel and drum upending truck is an auxiliary item to the Model 6055 barrel handling truck manufactured by the company.

#### Lift Slings

NEW sizes have been added to its line of "Level-Lift" slings by *MacWhyte Co.*, Kenosha, Wis. They are now available in  $\frac{3}{4}$ , 1  $\frac{1}{2}$ , 3 and 6-ton capacities. After the lightweight block containing wire rope is put on the crane hook, the crane operator spots the crane hook over the approximate center of gravity of the load and the floormen attach the sling to the load. Power is applied to lift



the load and as the crane hook is lifted, the rope automatically adjusts itself through the "Level-Lift" block, "paying out" one rope more than the other until the load is level and the two sheaves are braked automatically.

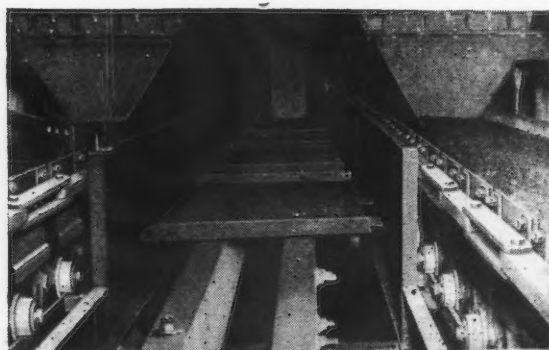


#### Stock Handling Cart

A STOCK handling cart has been announced by *Lyon Metal Products, Inc.*, Aurora, Ill. Model No. 2000-11, illustrated, is 30 in. long, 16 in. wide and 32 in. high. The desk accessory is 16 in. wide and 14 in. deep with a 5 deg. slope. The cart is finished in Lyon green baked enamel and is shipped set up.

#### Bulk Material Conveyor

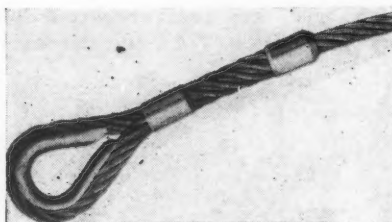
A CONVEYOR designed to handle bulk materials in a horizontal run-around path, within minimum headroom, has been announced by *Link-Belt Co.*, 307 North Michigan Avenue, Chicago. Called the Sidekar-Karrier, it provides conveyor storage for materials that are to be discharged simultaneously in varying quantities at a number of points. Any surplus material still left in the conveyor buckets after they have served the several discharge points will remain in the buckets to be recirculated. The conveyor is both self-feeding from any one of many feed spouts and self-discharging to any number of points, thus permitting continuous automatic operation. It



also differs from some conventional horizontal plane run-around conveyors in that the material is carried in buckets supported on rollers. The conveyor is available in two types, one recommended for boiler applications where coal is kept in bunker storage and delivered to one or more scale hoppers and the second designed to handle capacities up to 100 ton per hr. This type is designed for applications in which it is important that the material does not suffer from degradation or segregation.

#### Wire Rope Splice

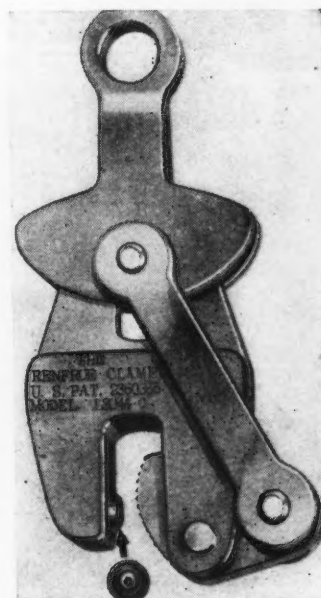
DEVELOPMENT of a method for splicing wire rope into slings or various assemblies which is said to be superior to the hand method, has been announced by *American Chain & Cable Co.*, Bridgeport, Conn. The splice does not distort the rope structure and so maintains equalization of stresses in all strands. The



splice applies the load stress in direct line with the pull of the load. It has no seizing to loosen, unravel or get in the way. It is wide open for visual inspection at all times and can be used with any standard fitting (hook, ring, shackle, thimble, etc.). Called Acco-Loc safety splice, it can be applied only at the factory.

#### Clamp

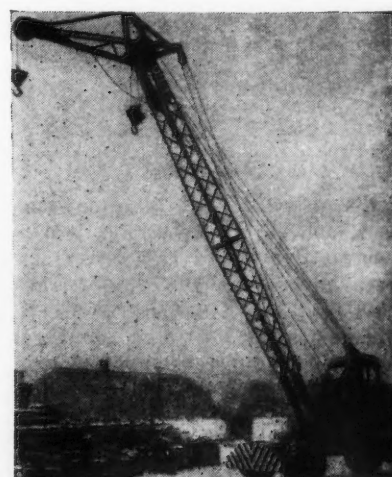
A CLAMP for lifting steel plate, called the Renfro, has been announced by *Paul Henry Co.*, 2037 South La Cienega Boulevard, Los Angeles. Through the action of the gripping cam shackle, the work is gripped firmly the moment tension is applied to the lift by the crane even though the body of the clamp is in a horizontal position. There is also an inserted swivel jaw opposite the gripping cam of the clamp. Together with the cam, the jaw is said to provide a deeper and



more secure bite on the plate. The clamps are available in 1, 1½, 3, 5, 10 and 20-ton capacity.

#### Mobile Crane

A MOBILE crane with a full vision cab has been announced by *Unit Crane and Shovel Corp.*, Milwaukee 14. The self-propelled, one-man operated crane is powered by a single engine, either gasoline or diesel and is equipped with an all-purpose, jib extension boom for multiple yard operations. The rated lifting capacity of the crane is 5 to 7 tons from the 30 ft. straight lattice boom. The 8 ft. jib extension will easily handle 4000 lb. The jib is designed for close-in operations, where ordinary angular straight boom lifting would be impossible. With this dual purpose boom each cargo hook works independently, one hook always available for light, close-up work and the other available for heavy lifts.





# ROD

## ... BY REVERE

Revere supplies rod in all the standard sizes and shapes, and in copper and copper-base alloys, magnesium and aluminum alloys. The physical characteristics of finished rod vary with each alloy and with the nature of its processing. Thus it is possible for us to furnish you with rod suitable for practically any desired purpose.

Revere Rod is produced in the following:

<b>Copper</b>	<b>Herculoy</b>
<b>Free-Cutting Copper</b>	(Silicon Bronze)
<b>Free-Cutting Brass</b>	<b>Aluminum Bronze</b>
<b>Brass (not free-cutting)</b>	<b>Aluminum-Silicon</b>
<b>Red-Brass</b>	<b>Bronze</b>
<b>Naval Brass</b>	<b>Cupro-Nickel</b>
<b>Muntz Metal</b>	<b>Nickel Silver</b>
<b>Commercial Bronze</b>	<b>Magnesium Alloy</b>
<b>Roman Bronze</b>	<b>Aluminum Alloys</b>
<b>Manganese Bronze</b>	<b>Special Alloys</b>

Available in coils or straight lengths, depending on size and composition. For full details, prices and deliveries, consult your Revere distributor or us. The Revere Technical Advisory Service will gladly work with you in selecting the rod best fitted for your needs. For this assistance, which is given without obligation, just write the Revere Executive Offices.

# REVERE

**COPPER AND BRASS INCORPORATED**

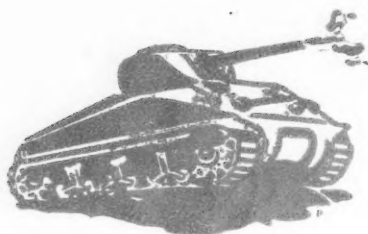
*Founded by Paul Revere in 1801*  
Executive Offices: 230 Park Ave., N. Y. 17, N. Y.



# Assembly Line

STANLEY H. BRAMS

• A start on automobile production will come on July 1 or earlier, with indications good that the total of 215,000 cars approved for this year may be expanded . . . Price policy may be based on parts formula . . . GM and Chrysler planning on expansion.



**D**ETROIT—In this column on April 26 last it was stated that "the automobile industry will be ready to make cars by mid-summer. It is a good 50-50 bet that automobiles will begin to come off the assembly lines almost immediately thereafter in halting erratic quantities. It is a better bet that regularized production, but on a limited basis, will be in effect by the end of this year."

The 50-50 bet was conservative. The odds should be about eight to one now that a few cars will be manufactured before Sept. 1, although output will certainly not be in volume figures. Similar odds should prevail on a prediction that upwards of 200,000 cars will be built by the end of 1945.

These conclusions derive from meetings held last week between the War Production Board and representatives of auto industry management and labor. These were the four prime facts to come out of the meetings:

1. Restrictions will shortly be revoked on production of spare parts, both functional and non-functional. This is perhaps the most important conclusion of the meeting, for it opens the way for manufacturers and suppliers alike to set up their facilities for volume output on all car components.

2. Truck manufacture, particularly in the light weights, is to be amplified to the limit, both under quota and beyond quota as pro-

ducers find themselves able to build.

3. Automobile companies are authorized to produce 214,678 passenger cars this year, this representing 10 per cent of the industry's "practical minimum" figure of 2,146,786 vehicles for a year's output. This figure will be subject to constant review and amplification if steel availability grows beyond present WPB expectations.

4. Labor is plumping for unlimited production at once as a means of counteracting what was claimed by the United Auto Workers Union to be "severe and growing unemployment." This pressure may advance the tentative go-day ahead of the presently anticipated date of July 1, as well as act to increase actual authorizations.

**T**HE crux of the automobile program today is steel. The earlier bugaboo of textiles can be expected to be beaten when the need arises for auto fabrics. The meeting heard a firm WPB promise that enough tires for necessary original equipment would be held from forthcoming production. That covers the other most worrisome materials bottlenecks.

As for steel, the industry people were told that they could obtain around 300,000 tons during the third quarter but no more. This, then, was the limiting factor on production. But what has not come out of the meeting generally has been the fact that there appears to be within WPB some belief that more steel will actually be available to fill the large automobile desires. Certainly the labor pressure which began to squeeze on Washington last week will be one potent factor in increasing the tentative allocation, if possible.

To be determined in the none too distant future is broad pricing policy on automobiles and auto requirements. Starting at the very beginning on this, Irving S. Olds and B. F. Fairless of U. S. Steel predicted last week in an interview here that the auto industry will pay \$6 to \$8 per ton more for steel than before the war, representing an increase of 12 per cent or so. Probably this was largely based on anticipations of OPA price increase authorizations. At any rate, it is one indication of the outlook at the basis material level.

At the parts level, OPA outlined a policy last week which may foreshadow its action on automobiles them-

selves. The formula, expected to meet strenuous objection in some supply quarters, can be expected to be equally acceptable to others. It is built on base representing costs and price during the last prewar production period, to which will be added increased materials and labor costs plus normal profit margin on the increases. This will result in a flat percentage increase which will be applied to an industry as a whole. Producers in that industry will be automatically empowered to enlarge their prices to the extent of the "increase factor." Some procedure will likely be worked out to permit appeal from companies which feel they must have larger increases, and it is the companies which object violently to the idea on the grounds that they will be placed under a limelight in an extremely awkward competitive position if they raise their prices in larger proportion than their competitors.

**A**T any rate, the auto companies may undergo the same experience. But abortive OPA attempts months ago to collect information which to base postwar car prices brought none too satisfactory results. Consequently, if a price determination is made on the basis of the incomplete information submitted, it can be expected to be unfair either to the auto companies or the postwar car buyer. OPA is in a most difficult position on this one. Its desires and intentions in maintaining price ceilings on all consumer goods may be spiked on the thorny automobile pricing problem and those intentions are rather futile anyway, because the car makers can build a car to any specified price and outsiders would be hard put to find where the skimping took place.

Perhaps it was with this idea being prepared for price freedom that its volume division that General Motors admitted last week that Chevrolet was hatching a "light car" out of the idea stage. Chevrolet now stands alongside Ford in its intention of invading the sub-low price field although perhaps not with the same unanimity of backing that prevailed at the Rouge. It would be a surprise, however, to find either making building such a car for volume sale before a year or more from the date.

The rest of the news budget of the week included another pair of

# RECONVERSION

## *News Flash*

### Standard P&W Small Tools and Gages Again in Stock at Branches

thanks go to General Eisenhower, his fighting men, hard-hitting allies and the forces of retribution led straight for Tokyo. Their tremendous achievement now opens the way to some reconversion for American industry. While we still are producing thousands of tools needed for war products, our production exceeds war needs. Once more we have restored prewar policy of maintaining strategically located stocks of all standard small tools and gages in order

to quickly service consumer convenience and necessity.

With speedy, orderly reconversion dependent upon adequate tools and tooling, the service at P&W branches will help our customers speed up post V-E Day production by re-building their inventories of essential tools.

For complete details on tools and gages stocked, and other valuable service available from all branches, phone or write any office listed below or get in touch directly with Accuracy Headquarters at West Hartford.

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Tel. 3-0668

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565 West Washington Blvd.  
Tel. Franklin 2720

CINCINNATI 2, OHIO

236 East 9th Street  
Tel. Parkway 3112

CLEVELAND 14, OHIO

1433 East 12th Street  
Tel. Cherry 8034

DETROIT 11, MICH.

2836 East Grand Blvd.  
Tel. Madison 1711

SAN FRANCISCO 3, CALIF. 1331 Howard Street  
Tel. Market 7363

LOS ANGELES 11, CALIF.

2675 Santa Fe Ave.  
Tel. Lucas 8187

NEW YORK 6, N. Y.

117 Liberty Street  
Tel. Worth 2-5830

PHILADELPHIA 8, PA.

401 N. Broad Street  
Tel. Walnut 1140

PITTSBURGH 19, PA.

613 Grant Building  
Tel. Atlantic 9577

ROCHESTER 4, N. Y.

89 East Avenue  
Tel. Stone 2893

ST. LOUIS 1, MISSOURI

710 N. 12th Blvd.  
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## PRATT & WHITNEY

Division Niles-Bement-Pond Company

WEST HARTFORD 1, CONNECTICUT

announcements, that Buick-Olds-Pontiac assembly plants will likely be built near Kansas City and Wilmington. Probably one more B-O-P assembly point will yet be designated. Closer to home was the closing of bids for two new buildings to be erected by Buick at Flint for new car manufacturing.

At South Bend, Studebaker announced a \$2,500,000 program covering rearrangement of manufacturing lay out and the construction of a modern building which, with a covered loading dock, will provide approximately 250,000 sq. ft. of space. This new building will be used for manufacture of truck cabs and pickup bodies.

And right in Detroit itself, Chrysler Corp. is bestirring itself for forthcoming production. Its Dodge Division plans to put up an addition to its main plant costing \$2,000,000 or so, and it will spend \$100,000 or more on a powerhouse addition at the same location. This will go a long way toward modernizing the comparatively elderly Dodge buildings. At the Chrysler Division on Jefferson Avenue, one building will be extended; and at the Plymouth plant a new conveyor is about to be put in to move frames from the truck delivery platform to the assembly line, a distance of 400 ft. or thereabouts.

Some work of this sort has already begun and is going forward on an overtime basis. Payment of time and half to rush installations for civilian goods manufacture points up the conclusion with which these remarks started—that the day of renewed automobile production can be seen on a none too distant horizon.

### **General Motors Buys Big Kansas City Plot Detroit**

••• General Motors has purchased a tract of land comprising approximately 300 acres, located in Jackson County, near Kansas City, Mo.

This land is bought for possible postwar use as a site for a plant to assemble Buick, Oldsmobile and Pontiac automobiles.

Further details will necessarily await the finish of the war and government decisions on availability of plants, material and labor for civilian automobile production.

### **Tight Steel Supply Blamed for Small Auto Allocation**

#### **Washington**

••• Tight steel supply for the rest of 1945 was the reason auto industry executives and labor union officials left here disgruntled last week with WPB's ultimatum that only 214,000 cars would be produced this year, unless the steel position improved.

Told by WPB that only 300,000 tons of steel could be programmed for the auto industry because that would have to be their share of an estimated 3,000,000 tons to be freed by military cutbacks, both management and labor indicated belief that more steel than this would be available.

Some steel officials doubted the accuracy of the WPB Requirements Committee estimate that so small an amount of steel would be released because of the method used in arriving at the figure and other factors affecting order cancellation.

One official summed up the apparent tightness of steel over the next six months as follows:

Army cutback procedure is slow and clumsy. Army Service Forces have not yet submitted complete estimates of total post-VE-Day cuts. Cutbacks are being made piecemeal (only shell steel cutbacks have been felt at the mill level).

ASF cutbacks are ultra-conservative, amounting to only about 15 per cent of second quarter expenditures and are mostly trimming of production increases. The longer ASF waits in making cuts to hold labor forces or to maintain employment, the deeper cuts will have to be when they are finally made.

Steel customers have been reluctant to relinquish mill schedule space on August and September deliveries in an attempt to reserve space for civilian steel orders and consequently have not let existing cutbacks be reflected in order cancellations. WPB may try to straighten this situation out.

Part of the tightness is psychological and once cancellations are properly made and steel supply becomes loose, the operating rate will decline substantially to permit most civilian industries to get the steel they need.

Many officials feel that the WPB Requirements Committee steel estimate of 3,000,000 tons to be released is inaccurate because the estimate

was based upon the cutback effect on steel production, expressed in dollars, with an adjustment for cancellations made by suppliers, plus normal reduction of inventories.

Steel officials point out that since no one knows just how much inventory adjustment will take place because WPB inventory information is unreliable and consequently no one knows just how much steel consumers have on hand in excess of the CMP permissible inventory of 60 days.

While the 214,000 car quota for the auto industry is not settled and no authorization has been given, WPB's rosiest estimate of first quarter 1946 production was only 400,000 cars, still 100,000 cars short of what the auto industry has said is the break-even point.

One WPB official's hunch is that enough steel will be made available to the auto industry to produce 400,000 cars in the fourth quarter of this year, depending upon the speed of cancellations.

At the May 16 meeting with WPB industry members were told that L-158 would be amended within the next few days to remove restrictions on production of replacement parts and that civilian truck production would be increased while military truck output is maintained. Preference ratings and material allotments are to be granted for this purpose.

R. J. Thomas, UAW-CIO president after the union conference with WPB executives on May 17 said that he thought that the order to start auto mobile production should have been given "30 days ago" and production should and could be started "this afternoon."

He scoffed at WPB estimates of steel to be available for the industry and asserted that there are several steel plants now not operating at full capacity.

### **General Motors Plans Lightweight Chevrolet Detroit**

••• General Motors plans to produce a lighter weight and more economical car in the postwar period.

Because of the necessity of putting war production first, the car is only in the idea stage, and therefore it cannot be placed in production until a considerable period of time after the close of the war with Japan. The car will be manufactured by Chevrolet and distributed through Chevrolet dealers.



# YOU GET CORROSION RESISTANCE

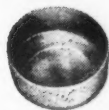
*Plus...*

Easy, Low Cost STAMPING,  
FORMING, DRAWING  
*with Carpenter Stainless*



## NO PROCESS ANNEALING

was needed to deep draw this steam trap bucket. Have you considered the economies you can gain and the trouble you can avoid by making your deep drawn parts from easy-working Carpenter Stainless Strip?



1ST DRAW



2ND DRAW



3RD DRAW



FINISHED BUCKET

## TOUGH PROBLEM SOLVED

This lock seam presented a difficult fabricating problem until Carpenter Stainless Strip went on the job. If you are having difficulties in fabricating stainless parts, be sure to try uniform soft and ductile Carpenter Stainless Strip.



Have you considered the greater utility advantages you can get by using Stainless Steel in your products?

For instance, you can give your products positive protection against heat and corrosion; you can provide them with 50% greater strength than ordinary cold-rolled steel; you can choose from a wide range of physical properties to meet specific requirements.

Just be sure when you select a Stainless Steel that you get one that works easily and economically in your fabricating shop. Carpenter, for instance, has spent years of intensive research developing soft and ductile Stainless Strip that blanks cleanly, forms readily, deep-draws easily. Exacting control through every step in manufacture, gives this Stainless Strip the consistent uniformity, lot after lot, that pays off in faster production runs with fewer rejects and less die wear.

Call in your nearby Carpenter representative today and let him help select the Stainless Strip that will make your production job easier and build extra service life into your products. And if you do not already have a copy of "Working Data for Carpenter Stainless Steels," drop us a line on your company letterhead.

## GIVE YOUR PRODUCTS THESE ADVANTAGES WITH CARPENTER STAINLESS

- Strength and Rigidity
- Heat Resistance
- Weight Saving
- Freedom from Rust
- No Plating to Peel
- Ease of Assembly
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- Sales Appeal

The Carpenter Steel Company • 121 W. Bern Street • Reading, Pa.

# Carpenter STAINLESS STEELS



## BRANCHES AT

Chicago, Cincinnati, Cleveland, Detroit, Hartford,  
Indianapolis, New York, Philadelphia, St. Louis

• Machine tool and other equipment costs for automobile industry to be \$50,000,000 on a break-even rate . . . Based on a capacity rate these costs will be \$150,000,000.



WASHINGTON — Reconversion costs and the transition periods of industries, which are considered to be the most seriously in need of preliminary help to avoid "bottlenecks" in returning to peacetime production, were detailed in a study made public by WPB on May 16. The overall figures in this study were published in THE IRON AGE of May 10, page 111.

Seventy-two industries were surveyed but not all of them were reported on the tables, which largely deal with small or medium-sized hard consumer goods industries. An exception is the automobile industry.

Immediate construction costs of \$29,000,000 will be required by the automobile industry to afford a minimum or break-even rate calling for a quarterly production of \$620,500,000. This cost rises to \$200,000,000 to achieve an all out or capacity quarterly rate of \$1,127,400,000. The cost of machine tools and other equipment will be \$50,000,000 on a break-even rate and for capacity rate operations it will be \$150,000,000. The time required to reconvert on a break-even rate is eight months. For full operations the transition period will be 15 months.

The total costs as finally estimated for the 72 industries are:

	Break-Even Rate	Maximum Rate
Quarterly production . . . . .	\$1,318,261,000	\$2,507,066,000
New construction . . . . .	36,348,000	234,664,000
Value of equipment . . . . .	61,582,000	189,331,000

It was determined at the WPB Automobile Industry Advisory Committee meeting on May 16 that the indus-

try would be permitted to produce only 214,000 passenger cars this year because of expected shortage of steel. The "break-even" point would be the output of 500,000 cars quarterly. The automobile industry is to be given only 300,000 tons of steel. Hence the industry will be on the losing side until steel and other supplies are ample to increase production sharply.

Not until the second quarter of 1946 is the industry expected to get beyond the break-even point. Labor supply probably will be no great problem. (Details of the WPB conferences with automobile manufacturers and the Automobile Industry Labor Advisory Committee are published in another section of this issue of THE IRON AGE.

\* \* \*

The WPB reconversion survey covers a broad range of metal working industries running from barber and beauty appliances to printing trade machinery, which when combined consume large quantities of steel of all kinds as well as a wide assortment of components. Getting supplies of the types of steel and components needed will be a difficult problem at first, in the opinion of WPB officials, but there is also a belief that the bottleneck may be broken sooner than was originally estimated.

Just as the range of industries is wide so is the variance in the shift from war to peacetime production, a very important matter of profit and loss. Until commercial output hits its stride many industries are scheduled for a tremendous drop in dollar volume. There are many examples, the chief one naturally being the automobile industry whose current quarterly war production is \$2,152,500,000. To achieve a "break-even" rate of quarterly production its dollar volume production would have to be \$620,500,000, according to the survey. The domestic mechanical refrigerator industry now producing for military use at the rate of \$141,225,000 will, like many other industries, drop abruptly and naturally, and to break-even it will have to turn out a quarterly volume of \$30,589,000 compared with a peacetime capacity of \$93,251,000. With cast iron sanitary enameled ware the picture is reversed. Its present quarterly production is only \$4,000,000. Its break-even quarterly rate would be \$40,000,000. Cast iron soil pipe and fittings would jump from

\$675,000 to \$6,600,000, and commercial dishwashing machines would continue at the present pace of \$1,400,000.

\* \* \*

While the House is expected to pass the administration bill extending the Reciprocal Trade Agreements Act for three years as it was reported out of the Ways and Means Committee, predictions are made that it faces rough seas in the Senate. The House Committee by a partisan vote of 14 to 11 gave its approval to the three-year extension from June 12 together with a provision that would authorize the President to cut tariffs up to 50 per cent under prevailing rates of Jan. 1, 1945. This means that rates that had been reduced by 50 per cent prior to that date could be cut by 75 per cent under their original amounts.

This added authority, as well as the extension of the act for three years, were the chief points that were attacked by opposing witnesses before the committee as well as by Republican members of the committee, and it is reported that the Senate Finance Committee, Democrats as well as Republicans, will knock out these provisions. At best, it is said the Senate Committee will report out a bill under Southern Democratic backing calling for a one or two year extension of the act as it stands. This report is interesting in that it is taken to reflect the fact that the war having seen an enormous growth of production in the South has made that section increasingly industry conscious and therefore tariff conscious. Head of the Finance Committee is Senator George, a conservative Democrat.

The Senate is expected, however, to endorse three "perfecting amendments" adopted by the House Committee. One of these amendments bars consideration of wartime emergency tariff reductions or eliminations to encourage imports of strategic metals and minerals in making further percentages cuts. Another amendment would prohibit reinstatement of the trade agreements with Czechoslovakia that existed when Germany invaded that country. There is, however, no prohibitions against negotiating a new agreement. The third amendment adds the War and Navy Departments to the list of federal agencies which must be consulted before the State Department can make new trade agreements.



Basifrit, the original quick-setting magnesite, is used in many open hearth shops as a standard hearth resurfacing refractory. A program of resurfacing regularly with Basifrit keeps old bottoms sound and clean.

## FURNACE REFRACTORIES "DOCTOR"

**D**ECREPIT old furnace bottoms, like sick old men, deserve expert attention.

Today there are hundreds of old open hearth furnace bottoms and electric furnace hearths that are operating on borrowed time. Some of them, in service for twenty-five or thirty years, or even more, are still hobbling along, doing praiseworthy duty in the prolonged program of war emergency steel production. It's no wonder they need careful nursing and expert doctoring.

That's why we call the Basic Engineer your Furnace Refractories "Doctor". This "Doctor" is trained in the most efficient refractory practice. He is a graduate of the school of experience—the actual making of basic open hearth and basic electric furnace steel. He is prepared to diagnose the ills of ailing old furnace

bottoms and linings and prescribe first aid or more permanent treatments.

He can help you with major or emergency hearth repairs. He can help you set up resurfacing programs with Basifrit, where old bottoms are sound underneath, which will not only cut delay time, but protect or improve steel quality, too. Or he can help you establish improved fettling practice with Magnefer or Syn-dolag, or economical, time-saving sidewall maintenance programs with Gunmix.

Then later, when you can spare the time, the "Basic" Sales Engineer can help you plan a complete rehabilitation program—to install new hearths of Ramix in old furnaces you are rebuilding, so that for postwar you can make steel once more with least loss of time, least trouble, and at minimum refractory cost.



**BASIC REFRACTORIES, INCORPORATED** 845 HANNA BUILDING  
Cleveland 15, Ohio



## ODT Steel Allotment In the Third Quarter About 1,532,136 Tons

### Washington

• • • Railroad passenger car production will start early next year, ODT announced on May 18.

WPB granted 5000 tons of carbon steel and 5500 tons of alloy steel to construct 250 coaches, head-end cars and non-luxury diners in the largest ODT allotment of steel in 1945, approximately 1,532,136 tons in the third quarter.

Passenger cars will be produced for the first time since 1942, and it is expected that at least 250 coaches will be built in each succeeding quarter after the first of the year.

Allotment of steel was made to permit the construction of 1100 additional integral buses, 12,000 tons, making the entire year's production approximately 10,000 buses.

The third quarter allotment of steel for trucks is 76,600 tons which will bring the entire year's production up to 186,000 units, the greatest number authorized during the war.

Carbon steel allotments for the more important transportation items in the third quarter are as follows:

1. Replacement rail: 495,900 tons allotted for railroads; 13,500 for transit lines. Second quarter allotments were 417,000 and 11,000 tons respectively.

2. Locomotives: 41,500 tons were allotted. This compares with 30,000 tons in the second quarter.

3. Freight cars: 220,000 tons allotted. This is to cover the present schedule of 11,000 cars to be built in the fourth quarter.

4. Track accessories: Allotment 244,500 tons for railroads, 4500 tons for transit lines.

5. Automotive replacement parts: 155,000 tons allotted. This is a return to the figure for the first quarter; it dropped to 130,000 tons for the second quarter.

6. Water transport: 28,000 tons allotted.

7. Petroleum and liquid transport: 438 tons allotted for tank trailers.

8. Other transportation: 950 tons allotted for street cars; 6000 tons for bus bodies; 300 tons for trolley coaches; 9200 tons for trailers; 500 tons for third axles.

The alloy steel allotment was 128,840 tons. This compares with 98,000 tons allotted for the second quarter. The necessary amounts of copper and aluminum were allocated to accord with steel allotments.

## Modifies Regulation To Aid Federal, State And Local Government

### Washington

• • • Effective May 16, the WPB issued Direction 3 to PR-13 (special sales) modifying priorities regulations to enable federal agencies, state and local governments to take advantage of preferences given them in the purchase of surplus property under Regulation 2 of the Surplus Property Board. WPB said that disposal agencies, in making sales to government agencies and state and local governments must comply with all applicable WPB orders and regulations.

Direction 3 modifies requirements for filling rated orders in the following two respects, unless WPB directs otherwise in writing:

1. In the case of orders for any item received during the first 30 days following notice of availability, preference will be given to federal agencies or state or local governments ahead of other purchasers placing orders bearing the same rating.

2. In addition, the filling of orders during the 30-day period will be postponed within the period, and the sequence in which a disposal agency received rated orders bearing the same rating during the period may be disregarded.

## THE BULL OF THE WOODS

BY J. R. WILLIAMS



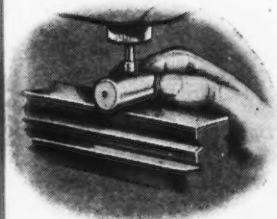
## Civilian Salvage Of Tin Nets 700,000 Lb.

### Washington

• • • Approximately 70,000,000 lb. of used tin cans were collected from civilian sources throughout the nation in the first quarter of 1945. W. Thomas Hoyt, director of the WPB Conservation and Salvage Division, has announced. He estimated that tin recovery is about 1 per cent of each pound of cans. On this basis the first quarter collection yielded 700,000 lb. of tin.

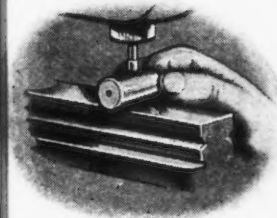
"This country has no native tin production and, before the war, imported about 90 per cent of its pig tin requirements from Malaya and the East Indies, now in Japanese hands," said Mr. Hoyt. "As much as two years may elapse after these mines are recovered by the Allies before tin in quantity may be expected."

# *"The Job's Easy-* **I KNOW WHERE I AM!"**



## **"LAST WEEK**

*I was grinding to a tolerance of .002". It was a cinch with a gage like this!"*



## **"THIS WEEK**

*I'm grinding to .0005", four times as close—sounds tough, but it isn't ... THE SPREAD IS THE SAME!"*



**S**URE, the job is tough if you don't know "where you are". But, higher amplifying indicating gages used right at the machine make tough jobs easier. They tell you where you are and what you're doing.

**RESULTS**—a better operator producing quality work—and more of it—at lower cost and with far less scrap and rework time. Every piece is checked, starting with the first. Assembly costs are reduced. The gage tells whether the machine is going out of

adjustment—whether the tools are getting dull and if the operator is doing anything wrong.

**"CHECK WITH SHEFFIELD"**—Visual gages in six different amplifications, Precisionaires of four different amplifications with Airsnap or Air Spindles, Electrigages, Dial Indicator Gages, Thread Checking Instruments and many others, make possible the selection of the right instrument for use at the machine for process control of both internal and external dimensions.

*Write for Engineering Data and a Demonstration in your plant*

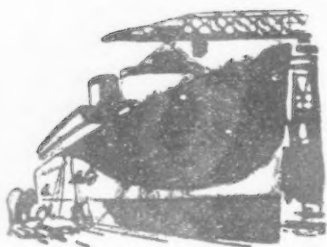
## **THE SHEFFIELD CORPORATION**

*Dayton 4, Ohio, U.S.A.*

**MACHINE TOOLS • GAGES • MEASURING INSTRUMENTS • CONTRACT SERVICES**



• Electric furnace plant slated for Shasta Dam by Bureau of Mines . . . Postwar steel consumption estimates for 11 western states . . . Aluminum strengthening and scrap salvage processes developed in Northwest.



**S**AN FRANCISCO — Expenditure of a fraction of one per cent for raw material surveys on a \$500 million Federal investment in new steel plant and dependant industrial facilities is prudent insurance, officials of the U. S. Bureau of Mines believe. Accordingly, among its long and short-term plans, the bureau has scheduled two projects which may have an immediate bearing on the future of the well-discussed western iron and steel industry.

The first of these is the construction of an electric furnace melting plant to produce high quality steels from abundant California magnetite. Site of the plant is adjacent to the huge Shasta Dam project at Redding, Calif., and adjacent to the extensive Shasta County magnetite deposits. Key to the plan is the use of low-cost Shasta Dam power.

The projected plant is to contain four units: Crushing and grinding, roasting, leaching and purification and electroreduction. The bureau wants to run commercial tests on its contention that Shasta County magnetite can be easily and cheaply benefited magnetically, to give a high yield of a purer iron oxide than it is possible to get by concentrating the majority of hematite ores. The bureau believes that this magnetite concentrate can be reduced to a high grade sponge iron equivalent to premium price imported Swedish sponge iron. As other alloying metals, high purity manganese and chromium are

See "Swedish Sponge Iron" by Einer Ameen, THE IRON AGE, Jan. 20 and 27, 1944. Also "Smelting Iron Ores Electrically" by Herman Cowes, THE IRON AGE, Dec. 3 and 10, 1942. The reader is also referred to the exhaustive report prepared by R. M. Miller for the North Pacific Division, Corps of Engineers, U. S. Army, Portland, Ore., entitled "The Feasibility of Establishing an Iron and Steel Industry in the lower Columbia Area Using Electric Pig Iron Furnaces," March 1, 1936.

also readily available, and there is some prospect of getting nickel and cobalt from western deposits.

If the bureau can support its contention successfully, it believes further study by private industry would be warranted.

The second project is an attempt to make metallic iron from Sunrise Wyoming ore with sub-bituminous coal. The bureau has had some success using the two-diameter kiln method for making granular sponge iron and is now trying the recently developed pelletizing procedure. Officials say that pelletizing in the rotary kiln is most effective as a pyro-concentrating scheme by which 25-50 per cent iron ore, mixed with suitable fuels and fluxes, is charged directly into the rotary kiln which can be operated to recover 90 to 95 per cent iron ore 6 in. or more in diameter with clean separation of the gangue as slag, in line with published German data on the subject.

Pelletizing low grade, high silica unconcentratable ores, like that from Sunrise, offers better prospects than granular sponge iron for lowering steel production costs under western conditions, the bureau believes.

One of the most significant features of these methods for making direct iron, the bureau says, is that, not only do they dispense with the need for coke, but they actually work better with low grade fuels, that is with the softer carbons. The char made



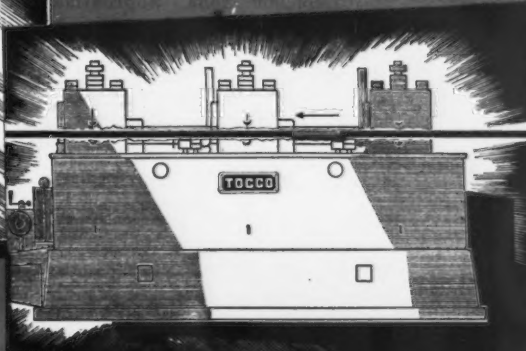
**WESTERN COUNCIL STEEL MEN:** The steel committee of the Western States Council met May 11 to organize a program for cheaper and more abundant steel in the 11 western states after the war. Front row, l. to r., E. L. Soule, John R. Simplot, Kenneth T. Norris, J. I. Hemmings, Fred Robbins. Second row, l. to r., John E. Barber, Charles Cook, C. J. Daiss, Wm. C. Schmidt, Clark D. Carpenter, F. T. Letchfield, James F. Bone.



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"JOB A." Tractor roller assembly. Harden rim surfaces and shrink-fit rollers on shaft simultaneously. Special TOCCO machine does this. Total heating time, 2 1/4 min.



"JOB B." Bar stock, 1" diam., SAE 1045 steel. Heat treat uniformly to 30-31 R.C. Special TOCCO machine does this and produces straight, scale-free stock at 30% cost saving.



"JOB C." 272-lb. tractor gear. Harden and eliminate need for scarce alloys. Special TOCCO machine does this . . . permits use of plain carbon steel. Saves 144,000 lbs. nickel per year.

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# TOCCO

**INDUCTION  
HARDENING, BRAZING  
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ce a program  
s R. Simplot  
aiss, Wm. C

from Wyoming sub-bituminous coal, as has been used at Laramie, is almost ideal, but in the absence of coal distillation facilities, the bureau is struggling to overcome the difficulties introduced by the volatile matter of bituminous coals.

The main objection to the iron produced in the rotary kiln is the presence of the sulphur in granular sponge iron. Just at present, there seems to be little chance to regulate the sulphur content of the pelletized iron, although when both the ore and the available fuel are low in sulphur, the pellets will also be low in sulphur and can be charged directly into either open-hearth or electric steel furnaces, according to bureau metallurgists.

The most recent effort of western foundrymen to find a substitute for Ottawa sand have again proved abortive. Test runs from the extensive Tiffany deposit in Nevada were unsuccessful. Results of the tests disclosed too high a percentage of fines as a result of breaking the grain in the milling process. This operation, for which such high hopes were held, is understood to be closed down.

A new development in the southern California sand market is the recent exhaustion and abandonment of the Red Gorge deposit, also in Nevada. This had been one of the chief sources of sand used in synthetic practice. Coincident with the depletion of Red Gorge has been the capture of a substantial portion of this market by owners of the Fire Valley, Nev., deposit who are understood to be shipping 1000 tons a month into the area.

**M**OST probable normal postwar annual market for finished steel in the 11 far western states will be slightly over 3,300,000 net tons annually, according to the careful estimate of a well informed steel source. This represents approximately 33 1/3 per cent increase over the

annual average for 1936 to 1940.

In analyzing the following figures, it is to be noted that flat products, including plates, sheets and tin plate are estimated to aggregate over 1,150,000 tons, approximately one-third of the total market. Shapes and rails aggregate 609,000 tons, bars 498,000 tons, tubular products 605,000 tons, wire products 338,000 tons, with an additional 97,000 tons for forging billets, blooms and other miscellaneous products.

Estimated percentages of increase over the prewar average vary from 10 per cent for tinplate up to 59 per cent for black sheets and 66 per cent for bars which include both hot and cold finished carbon and alloy material.

Detailed estimates are listed in the table below.

\* \* \*

Two new processes for the treatment of aluminum are lending encouragement to the proponents of the Pacific Northwest's favorite baby. Aluminum Oregon, subsidiary of Alcoa, in conjunction with several branches of the Army, have developed a process for the salvage of scrap aluminum to produce a high quality raw material. The scrap is dissolved in a bath of caustic soda while other metals and impurities are removed from the solution and the remaining liquor is returned by the Bayer process to pure aluminum oxide. This reclaimed product is said to be virtually the same as aluminum manufactured from bauxite and can be used for any purpose where other commercially pure aluminum can be used.

The second process is heat treating and strengthening of aluminum under a method developed by the Oregon Brass Works and has been in commercial use for the last 60 days. Seeking to raise the fatigue limit for

this light metal, Oregon Brass, Alcoa, Portland Gas & Coke Co., and the Kleenair Furnace Co., have developed a process somewhat resembling the steel-hardening process for iron. Roughly described as a heating and controlled cooling process, the treatment of the metal varies for different castings, alloys and desired results. Aluminum sockets for outboard motors on pontoons for the Oregon Shipbuilding Corp. are described as stronger and more satisfactory than the untreated sockets.

## Regulation Revision Aids Steel Companies Washington

• • • To assure producers that they will not have to decrease production of general steel products during the second quarter because of late cancellation of war contracts which might temporarily leave them with open mill space, WPB on May 19 deleted paragraph (b) of Direction 62' to CMP Regulation No. 1.

Steel producers will then be enabled to resume production and delivery of steel on deferred (ZW) orders for general steel products placed by distributors pursuant to the provisions of Direction 3 to Order M-21-b-1. Paragraph (b) had provided that no producer could produce or deliver any steel on orders bearing the CMP allotment symbol (ZW).

Direction 3 was issued to increase warehouse stocks of carbon steel products. It provided for reasonable increases in warehouse stocks of steel products when they could be affected without interference with the completion of war production on schedule. Direction 62 to CMP Regulation 1, suspended the operation of Direction 3 because of the then existing shortage of most steel products. Deletion of Paragraph (b) again permits the increasing of warehouse stocks of steel products.

## Chrysler Reconditions Tanks and Army Trucks Evansville, Ind.

• • • The Ordnance Plant here operated by Chrysler Corp., has delivered the last of approximately 1500 rebuilt and modernized medium tanks to the Army.

A payroll of approximately 3000 persons will continue work on reconditioning for overseas duty of more than 3000 Dodge Army trucks previously used for training purposes.

### MARKET TONNAGE ESTIMATES ELEVEN WESTERN STATES

(Prewar Figures are 1936-40 Average. All Figures in Net Tons)

PRODUCT	Prewar	Per Cent Increase	Postwar Probable
Forging Blooms and Billets.....	18,000	40	25,200
Plates.....	173,000	40	244,000
Structural Shapes, Steel Piling.....	223,000	25	279,000
Bars (Hot Rolled and Cold Finished, Carbon and Alloy).....	170,000	66	282,000
Concrete Reinforcing Bars.....	160,000	35	216,000
Black Sheets.....	193,000	59	306,000
Galvanized Sheets.....	110,000	50	165,000
Tin Plate.....	400,000	10	440,000
Tubular Products.....	466,000	30	605,000
Wire Products.....	225,000	50	338,000
Rails and Accessories.....	276,000	20	330,000
All Other.....	60,000	20	72,000
	2,474,000	33	3,302,200



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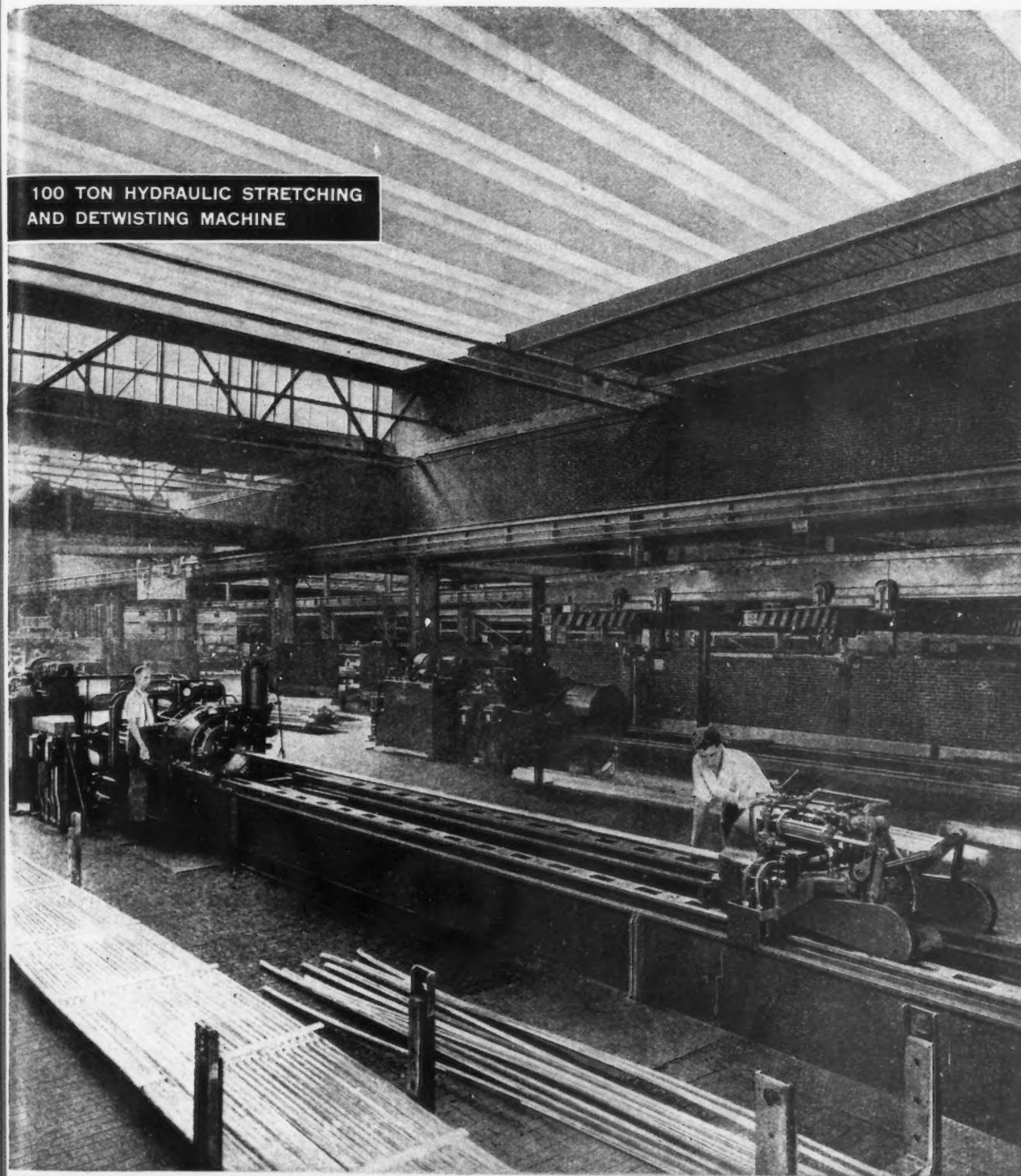
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# PERSONALS

• • •



**A. W. McGREGOR**, executive vice-president, Robbins & Myers, Inc.

• **A. W. McGregor**, who joined the production control department at Robbins & Myers, Inc., Springfield, Ohio, in 1919, has been elected executive vice-president of the firm; **F. W. Smith**, who started as an engineer in the motor division in 1911, has been elected vice-president and **W. J. Helmer** has been named general sales manager.

• **D. R. Stamy** has been appointed vice-president and general sales manager of the sales department, Standard Products Co., Detroit.

• **L. H. Lund**, treasurer since 1941 of the Westinghouse Electric Corp., East Pittsburgh, Pa., has been elected vice-president in charge of the treasury department; **William E. Miller** has been elected vice-president in charge of the law and patent department, and **Ralph C. Stuart**, vice-president in charge of Lamp and Lighting Divisions.

• **Alvin F. Franz** has been appointed general superintendent of the Buffalo plant, Wickwire Spencer Steel Co., New York. Mr. Franz previously was general superintendent of the Allan Wood Steel Co., Philadelphia.

• **Henry W. Davis**, formerly associated with Follansbee Steel Corp., has been named warehouse manager of Tin Mill Products Corp., Pittsburgh.

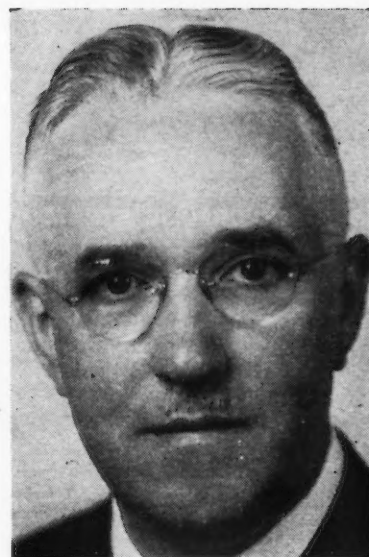
• **Willard C. Kress**, vice-president and director of the J. H. Williams & Co., Buffalo, N. Y., has been elected president of Aluminum Forgings, Inc., Erie, Pa., succeeding **A. Donnally Armitage**, who has become chairman of the board.

• **Walter H. Gebhart** has been elected a vice-president of Henry Disston & Sons, Inc., Philadelphia. Mr. Gebhart, who for the past two years has been manager of the domestic sales division, started with the company 35 years ago.

• **O. J. Horger**, formerly in charge of railway engineering and research, has been appointed chief engineer of the Railway Division, The Timken Roller Bearing Co., Canton, Ohio. **C. L. Eastburg** has been appointed assistant chief engineer and **P. C. Paterson**, service manager of the same division.

• **Henry A. Roemer, Jr.**, has been elected executive vice-president of the Detroit Seamless Steel Tube Co., Detroit. For the past three years Mr. Roemer has been assistant general manager of sales for the Pittsburgh Steel Co., Pittsburgh, and for six years prior had been affiliated with the company in various sales capacities.

**HENRY A. ROEMER, JR.**, executive vice-president, Detroit Seamless Steel Tube Co.



**DR. C. R. AUSTIN**, assistant to president, Meehanite Metal Corp.

• **Dr. C. R. Austin**, professor of metallurgy at Pennsylvania State College, has been appointed assistant to the president of the Meehanite Metal Corp., New Rochelle, N. Y.

• **A. Hugh Philpot** has been appointed vice-president and managing director of the newly formed export division of Copperweld Steel Co., Warren, Ohio, known as Aristoloy Steel International Co. In addition to being managing director of the export division, Mr. Philpot continues to be assistant to the president of Copperweld Steel.

• **N. S. Peterson**, former vice-president of SKF Steels, Inc., New York, has been appointed executive vice-president of the company.

• **Charles F. Codrington** has been appointed assistant to the manager and **A. E. Caudle**, sales manager of the blower and compressor department, Allis-Chalmers Mfg. Co., Milwaukee.

• **W. N. Brownlie** has become managing director of the Baldwin Locomotive Works of Canada, Ltd., a newly founded Baldwin Locomotive Works subsidiary.

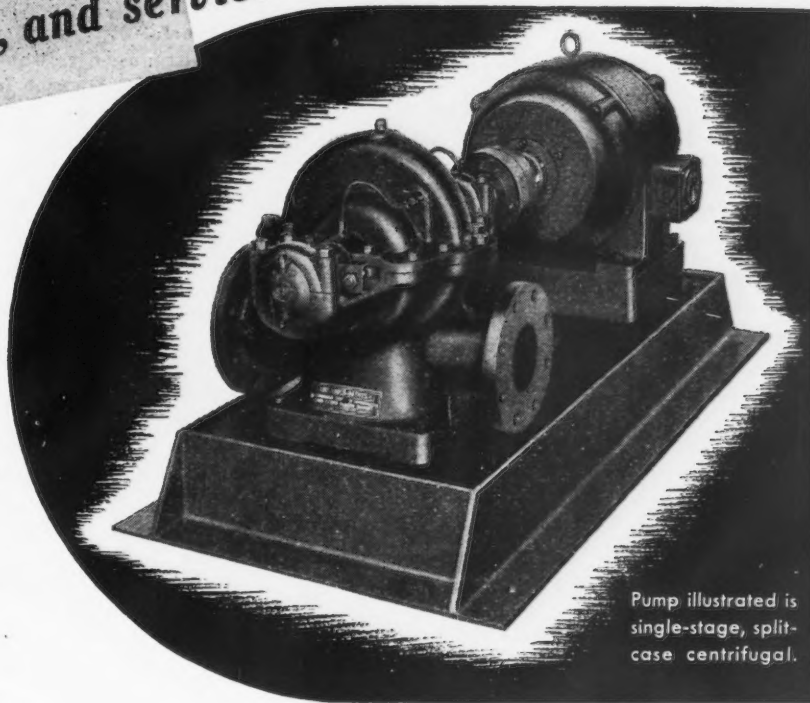
• **Emery J. Stevenson** has been elected secretary-treasurer of Wheelco Instruments Co., Chicago.

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**HENNING A. FORSBERG**, manager of operations, Continental Foundry & Machine Co.

• **Henning A. Forsberg**, since 1931 general superintendent for all four works of Continental Foundry & Machine Co., East Chicago, Ind., has been appointed manager of operations. **J. Edwin Johnson** has been named general superintendent, Chicago works, and **Paul A. Pierce**, superintendent of No. 3 foundry, succeeding the late **W. H. Parker**. **John W. Johnson** succeeds Mr. Pierce as head of the hull foundry with additional planning and control responsibility. **Frank R. Soderstrom** replaces Mr. Johnson as superintendent of No. 1 foundry, with **James M. Murray** succeeding Mr. Soderstrom as general foreman.

• **William J. Murphy**, previously foreman of the heat treating department, The Ferry Cap & Screw Co., Cleveland, has been appointed factory manager instead of assistant comptroller as was previously reported.

• **Otto G. Schwenk** has been elected comptroller of The Weatherhead Co., Cleveland. Mr. Schwenk joined the company last August as industrial engineer.

• **Albert B. Kern**, formerly assistant manager, has been appointed manager of the dock and vessel department, the M. A. Hanna Co., Cleveland, succeeding the late **George H. Warner**.

• **Earl F. Gregg** has been appointed sales engineer, electrical tapes, in the eastern division of Minnesota Mining & Mfg. Co., St. Paul.

• **Charles W. Crawford**, formerly manager of the Naval Ordnance Division of the Consolidated Steel Corp., Los Angeles, has been elected vice-president of the corporation in charge of engineering developments and research.

• **W. G. Lewellen** has been appointed director of the distribution staff, General Motors Corp., Detroit, succeeding **Nelson C. Dezendorf**. Mr. Lewellen previously was assistant general sales manager of the Chevrolet Division in charge of parts and accessories merchandising, warehousing and distribution, as well as general manager of the GM Parts Division. He will be succeeded in these capacities by **Thomas F. Brown**, who has been Chevrolet regional sales manager at Kansas City.

• **W. R. Toeplitz** has been named vice-president in charge of engineering research, Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.

• **Elliott G. Ewell** has been appointed vice-president and manager of the Southern Division, Mack-International Motor Truck Corp., Long Island City, N. Y.

• **Elmer A. Terwell** has been named assistant manager of the Chicago plant of Salkover Metal Processing.

• **Lieut. Col. Hubert E. Snyder**, recently returned to inactive status in the Army, has been appointed vice-president of the Penn Metal Corp. of Pa., Philadelphia, in charge of the Corrugated Metal Pipe Division. For 12 years previous to his call to active duty in the Army, Colonel Snyder was vice-president and general manager of the Shelt Co., Elmira, N. Y.

• **Henry A. Roemer**, **James H. Dunbar**, **Henry A. Roemer, Jr.**, **C. H. Hobbs** and **Ernest Keys** have been elected board chairman, president, executive vice-president, sales vice-president and general manager, respectively, of the Sharon Steel Corp., Sharon, Pa.

• **Robert J. Woods**, chief design engineer of the Niagara Frontier Division of Bell Aircraft Corp., Buffalo, N. Y., has been named special technical adviser to President Lawrence D. Bell.

• **Charles W. Miller, Jr.**, has joined the engineering staff of the Briggs Clarifier Co., Washington, D. C. Before joining the Briggs organization, Mr. Miller served as president of Aircraft Enterprises, Inc., Bridgeport, Conn.

## OBITUARY...

• **Charles D. Marshall**, a director of Bethlehem Steel Co., Bethlehem, Pa., and former president of McClintic-Marshall Construction Co., acquired by Bethlehem Steel in 1931, died May 16 at the age of 78. Mr. Marshall's company had built such structures as the Grand Central Terminal in New York City; the bridge over the Detroit River at Detroit, connecting Detroit with Canada and, among others, the new Waldorf-Astoria Hotel, the R. C. A. Building and the Graybar Electric Building in New York.

• **Frank S. Eagle**, assistant manager of rolled products sales for The Colorado Fuel & Iron Corp., Denver, died in New York City, May 7.

• **Martin W. Lantz**, 58, sales engineer in the steel piling division of the Bethlehem Steel Co., Bethlehem, Pa., died April 23.

• **William Niland**, 34, assistant superintendent of the North Tonawanda, N. Y., plant of the Buffalo Steel Co., died May 6.

• **Arthur Machek**, 67, founder of the A. J. Machek Machinery Co., Milwaukee, died May 7.

• **Karl R. Kopanka**, 53, manufacturing manager of Sealed Power Corp., Muskegon, Mich., died suddenly May 5.

• **Dr. E. W. Engle**, 57, research and consulting metallurgist for Carbonyl Co., Inc., Detroit, died April 26.

• **Guilford Duncan**, 67, president of The Ludlow-Saylor Wire Co., St. Louis, died May 9. Mr. Duncan joined the wire company in 1900, and succeeded his father, the late William Duncan, as head of the firm in 1911.

• **John A. Boyink**, who retired in January as purchasing agent and since had served in an advisory capacity with Pittsburgh Steamship Co., died May 7.



*The Judge says -*



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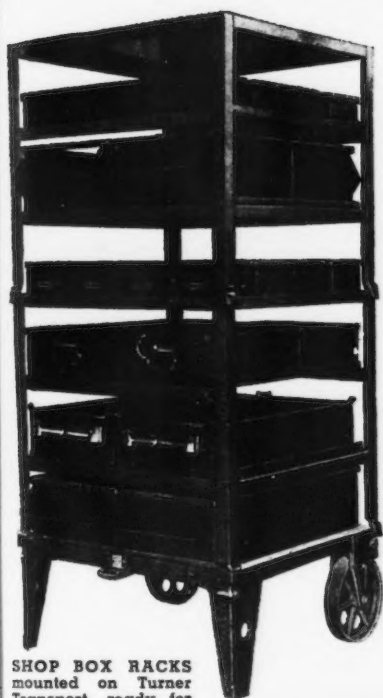
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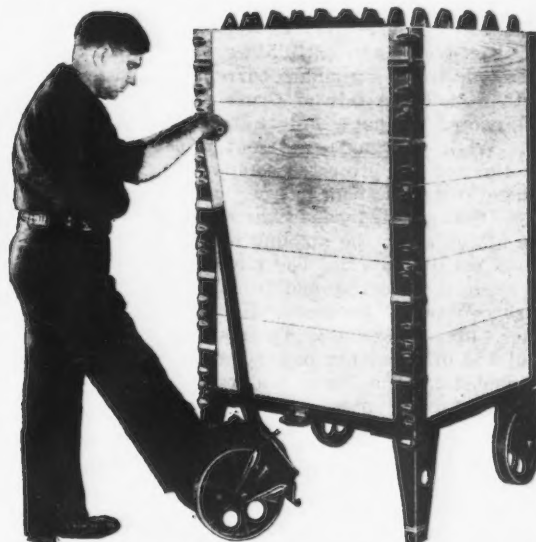
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# Dear Editor:

## INGOT MOLDS

Sir:

We are having some trouble in the use of ingot molds, and we wonder if you have data on mold analysis and pit side practice?

L. FERGUSON,  
Assistant Purchasing Manager  
Colvilles, Ltd.,  
195 West George St.,  
Glasgow, C. 2, Scotland

● We have forwarded copies of your letter to the Valley Mould & Iron Corp., Hubbard, Ohio; Gathmann Engineering Co., Catonsville, Md., and Shanango-Penn Mold Co., Dover, Ohio, firms who have accumulated a background of information on this subject.—Ed.

## PREFABRICATED HOMES

Sir:

I want to express my appreciation of the excellent article you ran on April 19. Over the years I have had occasion to read so many articles on prefabrication that I no longer have more than passing interest in them unless they are well written and give a clear picture.

FOSTER GUNNISON,  
President  
Gunnison Homes,  
U. S. Steel Corp. Subsidiary,  
New Albany, Ind.

## BRAZIL POWER RATES

Sir:

While the article by Eugene F. Horn "Favorable Factors Seen for Aluminum Industry in Brazil," in the Jan. 25 issue is very interesting, there are some gross errors in the power rates mentioned. Apparently a decimal point was misused in calculating the conversion from Brazilian currency into U. S., and the rate of Cruzeiros, 0.045, quoted on page 110 is imaginary. While this may represent the aspirations of the projected company, the legal rate is about 50 per cent higher than stated and therefore about fifteen times the amount stated in cents per 100 KWH. The plant in Ouro Preto is operating and from the published reports produces all that Brazil at present can use. The operation of the other plants mentioned is quite doubtful. The one at Rodovalho is manufacturing only sulphate of aluminum for the general market.

A. W. K. B.  
Brazil

## ABRASIVE CASTINGS

Sir:

With reference to the item on the Dear Editor page of the Feb. 15 issue in which a reader inquired about the technique of casting abrasives in iron for potato peelers, etc., we published an item describing the process on p. 368 of the Nov. 30, 1939, issue of the Foundry Trade Journal which reads substantially as follows: to deposit a layer of silicon carbide grit

of suitable size on the mold surface, one method is to spray or paint the pattern surface with linseed oil and to scatter grit evenly over the pattern. It is assumed that the pattern will be mounted on a molding machine plate or on a board. If machine molded, it must be the squeeze type of machine, since jarring and jolting would cause silicon carbide to get in the mold surface. Hand ramming can also be used, but the grit must not be disturbed or allowed to penetrate the mold skin. A fairly large grit must be used in order not to be dispersed by the metal stream from the runners. Various types of runners may be experimented with to find one that reduces grit disturbance to the minimum. Metal patterns are preferred since they do not absorb the linseed oil.

V. C. FAULKNER,  
Editor  
Foundry Trade Journal,  
High Wycombe, Buckinghamshire, England

## TORQUE OF BOLTS

Sir:

We have noted your reference to Mr. Almen's article "How Tight Should a Bolt Be?" in the Dear Editor page of the May 3 issue. Since the publication of this article, we have published two additional articles on the subject in *Fasteners*: "What Torque?" by W. C. Stewart, which discusses the many variables encountered in establishing a torque-tension ratio; and "Bolt Stress Measurement by Electrical Strain Gages" by Professor G. A. Maney of Northwestern University, which outlines preliminary results of research on the action of force and torque in wrenched-up bolts.

J. N. CALHOUN,  
Staff Engineer  
American Institute of Bolt, Nut &  
Rivet Manufacturers,  
Hanna Bldg., Cleveland 15

## PRECISION CASTINGS

Sir:

We have been informed that in the Feb. 10, 1944 issue there appeared an article on the subject of investment castings. We would appreciate your sending three copies to the writer's attention, either photostats or reprints.

H. H. HARRIS  
General Alloys Co.,  
Boston 27

● A compilation of reprints of seven articles on precision castings from The Iron Age is available at 50c. each.—Ed.

Sir:

Enclosed herewith please find 50c. in stamps for which send me a copy of your compilation of articles on precision castings referred to in last week's issue of THE IRON AGE.

R. J. ALLEN  
Worthington Pump & Machinery Corp.,  
Harrison, N. J.

## BASING POINTS

Sir:

We have some difficulty in interpreting vendors' quotations on steel shipments. For example, a vendor will quote f.o.b. shipping point, freight equalized, with some particular basing point. Another might quote f.o.b. destination, freight equalized, with some particular basing point. What is the exact meaning of these statements? We also receive quotations indicating that shipment is to go forward f.o.b. our plant or f.o.b. their warehouse. What is the reason for this inconsistency? R. E. HILL,  
Buyer

Murray Corp. of America,  
Scranton 2, Pa.

● A sale can be made f.o.b. shipping point or f.o.b. destination with freight equalized to the same basing point and the net cost to the purchaser is the same except with respect to tax, wharfage and handling costs. However, there is a difference in the question of ownership and therefore financial responsibility while in transit. The steel pricing system, as long established in the industry, employs a number of basing points for pricing which vary with different products. This system is a simple method of quoting delivered prices and results in the competition of many geographically separated steel producers. The steel basing point pricing system is discussed in an article on p. 108 of The Iron Age for April 15, 1943.—Ed.

## TAPER ANGLES

Sir:

Handbooks point out that self holding tapers are the small tapers up to 3 deg. included angle and that self-releasing tapers are the large tapers such as 16 deg. included angle. What is the maximum included angle for a self-holding taper, and the minimum included angle for a self-releasing taper?

J. J. LARKIN, JR.,  
Executive Vice-President  
Larkin Packer Co., Inc.,  
6200 Maple Ave., St. Louis

● In Marks' Mechanical Engineers' Handbook, Fourth Edition, published by McGraw Hill Book Co., Inc., there is on p. 238 a section devoted to calculations of taper keys. This paragraph concludes that the key will be self-locking when the half angle of the key is less than that of the angle of friction. On p. 233-4 coefficients of static and sliding friction are given for various materials where the coefficient of friction equals the tangent of the friction angle. Unfortunately, most of the values for steel, both hard and soft, are given for clean dry surfaces. The coefficients vary from 0.15 to 0.57, corresponding to friction angles of 8½ to 29.7 deg. For lubricated surfaces these values would be less.—Ed.

## BARBECUE EQUIPMENT

Sir:

Please inform me of manufacturers making barbecue equipment, such as motorized spits, etc. Although they may not now be engaged in peacetime manufacture, they may be interested in adding prospects to their mailing list.

F. JONES  
1211 Fairview Drive, Columbia, S. C.

● A list of suppliers has been mailed.—Ed.

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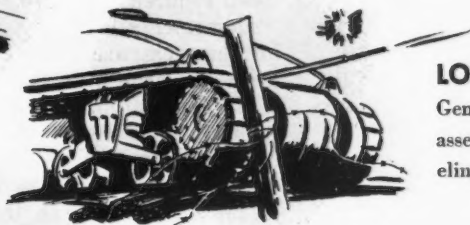
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S. C.  
iled.—Ed.



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# This Industrial Week . . .

- **Steel Price Rise Seen as Disappointing to Steel Industry**
- **Cancellations Increase, but Mill Openings Are Small**
- **Steel Ingot Rate Remains at Low Point of 92%**

**W**HILE the steel industry was pondering over the latest steel price revisions announced by the OPA Tuesday of this week to be effective Wednesday, May 23, the raw steel production rate continued at 92.5 per cent and there were increasing signs that order cancellations were on an upward trend. Despite this latter condition, however, there were few indications that openings on steel mill schedules expected to materialize by July 1 would be large enough to give much hope for even moderate scale resumption of civilian manufacture.

Announced months after it had been promised, and requiring voluminous data, price increases on certain steel products will probably satisfy no single company or group. Non-integrated steel makers comprising the smaller steel companies have already condemned the revisions as insufficient for them. Large steel companies are "worn out" after having attempted to get a healthy boost in prices. Labor will probably use these increases as an argument for higher wages. The OPA which, when announcing the changes released a long comprehensive "statement of considerations," will probably live to see the day when its price pattern will haunt it with claims and hues and cries that the whole steel price balance has been put out of kilter.

Arguments will probably continue for months as to what benefits the industry obtained as a result of the increases. One thing seems certain from the OPA's statement of considerations—under controlled prices there is no chance for any company to obtain price relief until a most exhaustive and prolonged study of costs factors has been made.

Briefly summarized steel price increases allowed were as follows: Light rails, which had been advanced \$3 a ton in January, have been advanced an additional \$2 a gross ton, making a total increase of \$5; tie plates are up \$3 per net ton; carbon steel hot rolled bars up \$2 a net ton; carbon steel wire rods up \$3 a net ton; manufacturers wire up \$3 a net ton; barbed wire up \$2 a net ton; bail ties up \$7 a net ton; carbon steel blooms, billets, slabs and sheet bars up \$2 per gross ton; and carbon steel tube rounds and tube billets, exclusive of billets not converted into seamless tube or pipe, up \$4 a gross ton.

Carbon steel plates subject to sheared and universal tolerances which were advanced \$2 a ton in January have received an additional boost of \$1 a ton making a total of \$3 a ton. Galvanized iron and steel sheets and zinc coated specialty sheets including roofing and siding which were advanced \$3 a ton in January have had an additional increase of \$1 a ton making a total increase of \$4 a ton. Nails and staples other than galvanized which were advanced \$5 a ton in January were increased another \$2 a ton making a total increase of \$7 a ton. Track spikes were advanced \$5 a net ton.

Cancellations amounting to as high as 50 per cent of gross bookings have, in most cases, failed to reduce net orders to a point where early openings in mill schedules are prevalent. Net orders holding close to the moderate level reported throughout May, which is about 40 per cent less than the peak weeks scored early in 1945, are in the cases of several principal producers only slightly less than shipments. Pressure has been heavy, notably from the automobile industry, to schedule unrated orders authorized for second half delivery by open ending of CMP.

Although cancellations have produced spot openings, these have been filled with the exception of some plate tonnage by rated orders, and producers almost universally have declined to make firm commitments on unrated tonnage. If product cancellations are reflected soon on mill schedules, some unrated tonnage may find its way into production in August. For the most part, however, heavy carryovers of rated business will dominate, and order backlogs assure mill schedules at the current levels for several months. Some customers hold third and fourth quarter allotments which they have been unsuccessful in placing with mills.

The long term picture presents several factors which could result in a partial thaw. The landing mat program for the second half of 1945, considered one of the keys to possible automotive sheet production, has been reduced from 450,000 tons to 300,000 tons. Steel requirements for armor piercing shot for the balance of this year are understood to be only 2000 tons because of large inventories in the hands of contractors. This alone promises easing of the alloy steel picture. Cancellations at the contractor level continue to be reported for heavy caliber ammunition and gun components, tanks, vehicles and construction material for advanced bases. For the first time, the critical hot topped steel production appears sufficient to fill essential needs.

The cuts have been cushioned by WPB pressure to step up tin plate and rail production. WPB has authorized production of 495,000 tons of replacement rails for the railroads, and 13,500 for the transit lines for the third quarter compared to the industry's total controlled cooling capacity of 600,000 tons.

Re-examination of lend-lease requirements has resulted in cancellation of French orders, it is understood, and holding up of all Russian shipments. Steel circles believe that rail tonnage will be released to the Russians, however.

THE IRON AGE steel scrap composite price has declined this week 16c. a gross ton to \$18.92 a gross ton as the result of further weakness in heavy melting scrap at Philadelphia. Turnings prices have declined at most centers. The entire scrap price situation seems poised for more action in the future.

• **PACIFIC THEATER NEEDS**—Indication that needs for mechanized equipment and other war material will be intensive in the Pacific campaign comes from Gen. Joseph W. Stilwell, Commanding General, Army Ground Forces. Gen. Stilwell says that major Chinese railroads are single tracked and that there is a definite shortage of rolling stock. This is taken to mean that there will be not only railroad requirements for waging the war on the Asian Continent, but also continued demand for 6 x 6 cargo trucks. Lacking any industry of significance, China is seen as needing equipment practically from the ground up. He is in favor of substantial supplies of medium and heavy tanks as cover for our advancing forces. Gen. Stilwell reports that the garrison in Manchuria is "tough," that it has been strengthening itself since 1931, and that it "will certainly fight." He indicates that the self-sufficiency of this region will make it possible to continue resistance even though the homeland islands of Japan fall.

• **SLOW FURNITURE RECONVERSION**—Both the metal household furniture and the chromium-plated furniture industries, following a meeting of their advisory committees with WPB officials, are predicting slow reconversion to civilian production. Continuing heavy orders and scarcity of some materials are regarded by the metal household furniture industry as the chief deterring factors while in the chromium plated furniture industry replacement of worn out machinery was said to be its number one problem, after materials, which are expected to continue scarce over the remainder of the year. Among scarce products listed in both industries are steel sheets. Hope was expressed that the sheet situation would become easier in the third quarter, when chromium plated tubular furniture makers also expect to get aluminum for decorative trims. The metal household furniture industry reported that it is confronted with a scarcity of zinc supplies which is expected to continue for some time.

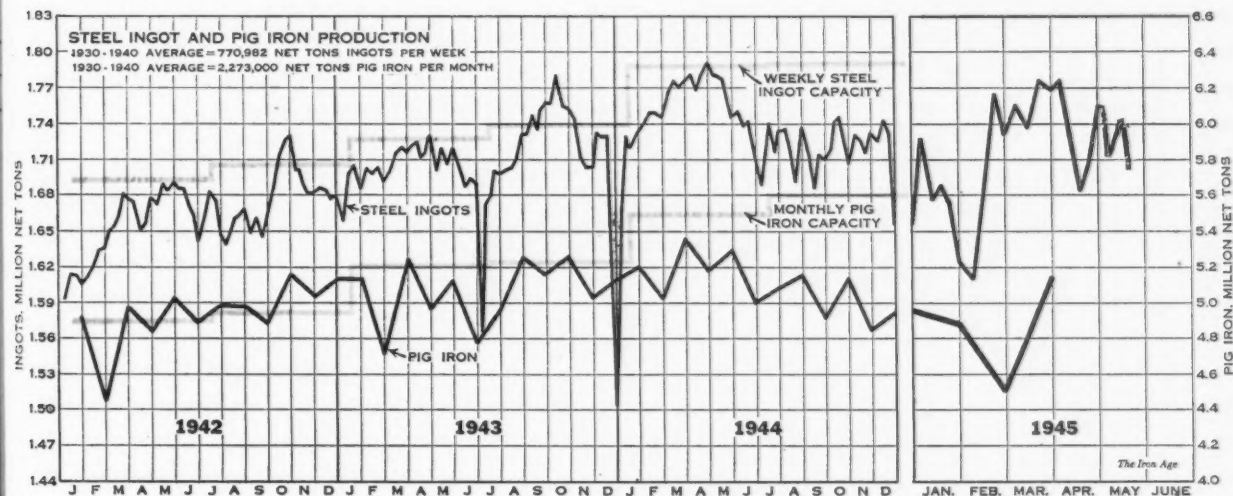
• **TIGHT STEEL SUMMARY**—One steel official summed up the apparent tightness of steel over the next six months as follows: Army cutback procedure is slow and clumsy. Army Service Forces have not yet submitted complete estimates of total post-VE-Day cuts. Cutbacks are being made piecemeal (only shell steel cutbacks have been

felt at the mill level.) ASF cutbacks are ultra-conservative, amounting to only about 15 per cent of second quarter expenditures and are mostly trimming of production increases. The longer ASF waits in making cuts to hold labor forces or to maintain employment, the deeper cuts will have to be when they are finally made. Steel customers have been reluctant to relinquish mill schedule space on August and September deliveries in an attempt to reserve space for civilian steel orders and consequently have not let existing cutbacks be reflected in order cancellations. WPB may try to straighten this situation out. Part of the tightness is psychological and once cancellations are properly made and steel supply becomes loose, the operating rate will decline substantially to permit most civilian industries to get the steel they need.

• **FONTANA EXPANSION**—Addition of hot rolled sheet, tin plate, and tubular product facilities to the Kaiser Co., Inc. steel plant at Fontana have been proposed by Henry J. Kaiser, west coast shipbuilder, who holds an RFC loan on the plant, according to press reports.

The additions would be contingent upon RFC approval of terms proposed by Kaiser for repayment of a \$111 million RFC loan on the existing facilities the reports state. If this can be satisfactorily arranged—Kaiser is quoted as stating that he can finance the additional facilities by means of a \$52 million loan which a private bank has promised. The Fontana plant recently was surveyed for the post war possibilities by the H. A. Brassett Co. for Kaiser and Arthur G. McKee for the government.

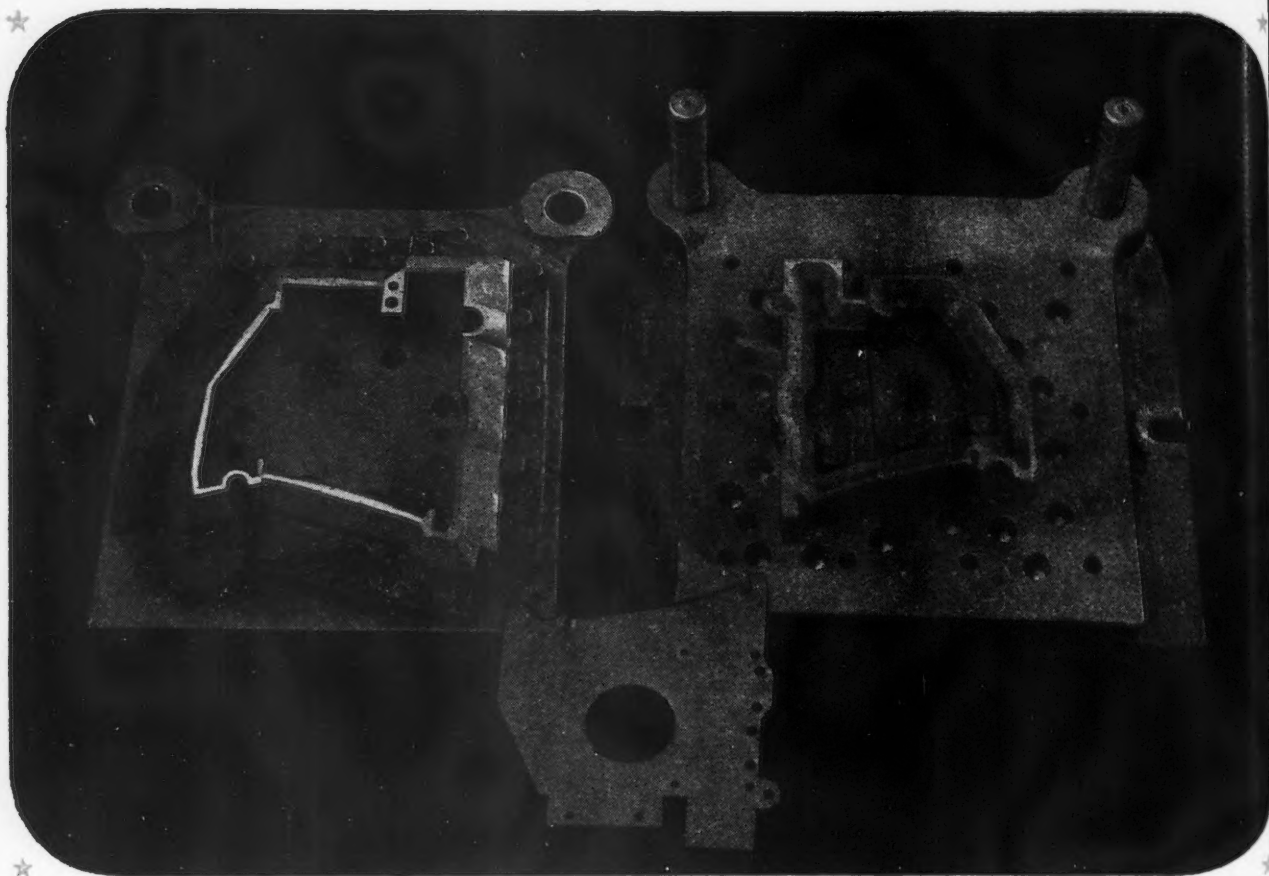
• **MEDIUM SHELL CUTBACKS**—The cutbacks in the medium artillery shell and the mortar shell production programs, made at an Ordnance Department meeting in St. Louis recently, were not as severe as originally expected. This is believed to have resulted from the fact that Japanese artillery encountered at Okinawa was far better than originally expected and, perhaps in certain instances, better than what American forces had available. Consequently, expected cuts in the 60 and 81 mm. mortar shell output were not made, and the production programs for these items remain exactly as originally planned. However, such was not the case with the 105, 75, and 90 mm. shell program.



*Steel Ingot Production by Districts and Per Cent of Capacity*

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Whelesing	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
May 15 .....	94.0	98.0	93.5	97.0	96.5	23.5*	91.0	99.0	93.5	83.0	96.0	91.5	95.5	92.5
May 22 .....	94.0	98.5	90.5	96.5	94.5	87.0	91.5	95.0	95.5	50.0	95.5	75.0	95.0	92.5

\* Revised



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## OPA Raises Steel Ceilings After Long Study

### New York

• • • Announced months after it had been promised and requiring voluminous data, price increases on certain steel products will probably satisfy no single company or group. Non-integrated steel makers comprising the smaller steel companies have already condemned the revisions as insufficient for them. Large steel companies are "worn out" after having attempted to get a healthy boost in prices. Labor will probably use these increases as an argument for higher wages. The OPA, which when announcing the changes released a long comprehensive "statement of considerations," will probably live to see the day when its price pattern will haunt it with claims and cries that the whole steel price balance has been put out of kilter.

Arguments will probably continue for months as to what benefits the industry obtained as a result of the increases. One thing seems certain after a reading of the OPA's statement of considerations—under controlled prices there is no chance for any company to obtain price relief until a most exhaustive and prolonged study of cost factors has been made. There also seems little doubt that the OPA in dealing with the steel price situation went about as far as it could on the basis of the data submitted to give some form of relief to the industry as a whole. The complex structure of the steel industry, the certainty that some companies will always make more money than others and the difficult position of the small non-integrated steel makers are only a few of the factors which prevented a price increase which would be satisfactory to all those involved.

Inasmuch as steel prices in many cases are the "bellwether" for the price structure of items made from steel, the OPA will probably soon be involved in price discussions with steel consumers. Furthermore, since many of the factors which went into the decision to revise certain steel products are in the last analysis estimates or arbitrary assumptions, it is expected that the steel price problem has by no means been settled. It is recalled, however, that even with the present advances on certain steel items the general steel price level is still somewhat lower than in 1936 and 1937.

Basic steel prices before the present increase represented a level which

### Some Confusion?

#### New York

• • • Because the OPA has announced the steel price revision in such a way that the interim increases are included in its statement, there has been some confusion as to the net increases at this time. On five products the new increases replace those made in January of this year. On the other nine products the increases are the first made since steel price control went into effect. In the cases where the interim price were replaced by the latest announcement some products were given an additional boost above that granted in January while a few were not changed. None were lowered in price.

was the result of "down to earth prices" established in June, 1938. At that time there had been serious price cutting going on and as the result most steel prices were reduced "officially" several dollars a ton. The industry never got a chance to get its quotations up from that level because the OPA in a surprise move in 1941 froze all steel prices on the eve of a general advance.

Late reports from steel centers find most private comments to be concerned with the smallness of the relief. Most severely affected are the small producers and it may be expected that the OPA will be subject to quite an amount of censure from many sources. Also some steel leaders profess to see a "sleeper" in the announcement that study is being made toward reducing some steel prices which may be too high. This apparently means that the OPA will make a further study of those war items on which the profit seems to be high. On the other hand, many of these items are no longer in great volume and it may be that by the time the study is completed the "horse will have gone" before the door could be locked.

While the OPA has said that it tried as far as possible to retain the differentials between semi-finished steel and finished prices in order to eliminate a "squeeze" for the non-integrated makers, the latter claim that in most cases the differential which existed before

was unfair. Thus, they argue that with the present raises there still remains the hardship that may drive some of these companies out of business. This argument goes to the very bowels of the steel price question. There has for years been the problem of the small producer who has had to buy his raw material from the large ones and every time there were changes which closed up the gap between semi-finished steel prices and the sale price of the finished item, some of the smaller companies came that much closer to the red ink. On the other hand, the large companies have argued that they could not afford to sell the semi-finished steel at a price which was losing them money and at the same time have that steel go to other companies which used it to make the same finished articles which competed with them in the steel market. This has always been a sore spot where the price of steel has been discussed. Like many other problems it seems to have no answer.

On the other hand, if the smaller companies go on fighting and get a larger price advance it may be that they will get it as a group and the larger companies may not be permitted to get the same relief. On the face of it this would not help the smaller companies in a market where the supply of steel was more than the demand. Under such a condition it is certain that the steel buyer would go to the plant where the price is lower. Even though the smaller companies should get individual permission to increase prices as has been the case in the past the same set of competitive conditions would apply.

No matter what the outcome of the price argument set in motion by the smaller companies, the bigger steel plants will have to come into the picture again. The background and history of the steel industry dictates that this must be so. However, many of the larger steel companies privately argue that if steel prices are raised too high, use of steel might be displaced. The whole price picture is so loaded with dynamite and the decisions which might be made by a government body so shattering to the finely balanced setup in an industry that the steel price arguments may well be the rocks on which the OPA is wrecked.

## Steel Price Increase Covers Fringe Wage Costs and Coal Price Rise

### Washington

• • • Effective May 23, steel price increases on 14 carbon steel products were approved by OPA May 22. The increases range from \$2 to \$7 a ton.

On five products the increases replace the interim increases of \$2 to \$5 a ton authorized Jan. 11. On the other nine the ceiling price increases are the first since 1941 or before price control began. OPA estimated the increase will amount to between one and two per cent in basic steel prices or somewhere between \$80,000,000 and \$100,000,000 a year. While previously denying that wages figured in the interim price increases, OPA said in its statement of considerations amending Revised Maximum Price Schedule No. 6 that adjustments have been made for the minimum effect for two of the fringe adjustments granted in the steel wage decision, determined at 4c. an hr.

A further adjustment was made, OPA said, for the increase in wages to the coal miners just granted. Estimated at 20c. a ton of coal, a like amount a ton of ingot steel, which on the basis of individual product yields will average 30c. a ton of finished steel products.

At the same time, an amendment to Revised Price Schedule No. 49, covering warehousemen and jobbers was issued. In general, resellers will be required to absorb all ceiling mill price increases except those authorized for carbon steel merchant quality wire, bright nails and staples, twisted barbed wire and barbed wire, bale ties and galvanized and painted roofing and siding.

OPA granted an additional price increase on products covered by the interim order. They are: Light rails, all types and grades, \$3 per gross ton under the interim order, now \$5 per gross ton; galvanized iron and steel sheets and zinc coated specialty iron and steel sheets, including roofing and siding manufactured from those materials, 5c. additional per 100 lb.; nails and staples, other than galvanized, previously increased by 25c. per 100 lb. were increased another 10c. per 100 lb. Carbon steel plates were increased 15c. per 100 lb. replacing the interim price increase of 10c. per 100 lb.

The price revisions and increases,

over the levels in effect prior to Amendment 11, are as follows:

Carbon steel blooms, billets, slabs and sheet bar, of all quantities—\$2.00 per gross ton.

Carbon steel tube rounds, and tube billets exclusive of billets not directly converted into seamless pipe or tubes—\$4.00 per gross ton.

Carbon steel plates, all types and qualities, produced to the dimensional tolerances in A. I. S. I. Manual Section 6, carbon steel plates, March 18, 1943 revision—15c. per 100 lb.

Rails, except light rails, all types and grades—\$3.00 per gross ton.

Light rails, all types and grades \$5 per gross ton.

Tie plates, all types—\$3 per net ton.

Carbon steel hot rolled bars and bar size shapes, all types and qualities—10c. per 100 lb.

Carbon steel hot rolled wire rods, all types and qualities—15c. per 100 lb.

Carbon steel manufacturers wire and carbon steel merchant quality wire, all types and finishes, except such manufacturers wire for which a base price in excess of \$3.20 F.O.B. Pittsburgh, Pa., or \$3.30 F.O.B. Worcester, Mass., is otherwise established by this schedule—15c. per 100 lb.

Nails and staples, other than galvanized nails and staples—35c. per 100 lb.

Except that for all miscellaneous nails and wire brads having maximum prices based on list prices less published discounts, the increase of 35c. per 100 lb. may be added to the maximum delivered prices.

Twisted barbed wire and barbed wire—10c. per 100 lb.

Bale ties, all types—35c. per 100 lb.

Hot rolled carbon steel, porcelain enameling, iron and electrical steel sheets, including roofing and siding manufactured from those materials, all types and qualities—10c. per 100 lb.

Galvanized iron and steel sheets, and zinc coated specialty iron and steel sheets, including roofing and siding manufactured from those materials (not including galvanized

nealed sheets)—20c. per 100 lb.

Track spikes—25c. per 100 lb.

The amendment is further designed to clarify certain provisions of the schedule to elaborate on the record-keeping and invoicing requirements, and to require the specific approval of special prices rather than permit their establishment by a mere filing.

**Warehousemen and jobbers may pass on to their customers the following:**

1. The mill price increase of 35c. per 100 lb. for bright nails and staples which replaces the increase of 25c. per 100 lb. authorized at the mill level Jan. 11.

2. The increase of 20c. per 100 lb. for galvanized roofing and siding and 10c. per 100 lb. for painted roofing and siding which replaces the interim increases of 15c. and 10c. per 100 lb. respectively, which were authorized at the mill level Jan. 11.

3. The increase of 15c. per 100 lb. for carbon steel merchant quality wire.

4. The increase of 10c. per 100 lb. for twisted barbed wire and barbed wire which becomes effective May 23.

5. The increase of 35c. per 100 lb. in the ceiling price for bale ties, a merchant wire product, which becomes effective May 23.

**Warehousemen and jobbers must absorb the following:**

1. The mill price increase of 15c. per 100 lb. for carbon steel plates, which becomes effective May 23, and replaces an interim increase of 10c. per 100 lb. authorized Jan. 11.

2. Increases of \$3 per gross ton for standard rails and \$5 a ton for light rails which become effective May 23 and replace an interim price increase of \$3 per ton for all rails granted January 11.

3. The increase of 10c. per 100 lb. for hot-rolled carbon sheets (except painted roofing and siding), all sizes and gages, which becomes effective May 23 and replaces an interim increase of a like amount authorized Jan. 11.

4. The 20c. per 100 lb. increase for galvanized iron and steel sheets (other than galvanized roofing and siding) and zinc-coated sheets which becomes effective May 23 and replaces an increase of 15c. per 100 lb. granted Jan. 11.

5. The mill price increase of \$2 per gross ton for carbon steel



blooms, billets, slabs and sheet bar of all qualities.

6. The mill price increase of \$4 per gross ton for carbon steel tube rounds, and tube billets, exclusive of billets not directly converted into seamless pipe or tube.

7. The mill price increase of \$3 per net ton for tie plates, all types.

8. The mill price increase of 10c. per 100 lb. for carbon steel hot rolled bars and bar size shapes, all types and qualities.

9. The mill price increase of 15c. per 100 lb. for carbon steel hot rolled wire rods, all types and quantities.

10. The mill price increase of 15c. per 100 lb. for carbon steel manufacturers wire except that wire for which a base price of over \$3.20 F.O.B. Pittsburgh or \$3.30 F.O.B. Worcester, Mass., is otherwise established.

11. The mill price increase of 25c. per 100 lb. for track spikes.

urged consideration of the Fisher offer, and left the meeting in protest when no action was taken.

The move to accept the Fisher proposal came from Carseten Tiedeman of the Hudson directors and Detroit regional head of the War Production Board. Mr. Tiedeman came into the meeting with proxies for 150,000 shares of his family, 190,220 of a Dutch investment trust, Broekmans Administratiekantoor, and about 100,000 others.

Management interests headed by President A. E. Barit and apparently supported by some of the largest other individual stock interests opposed the Fisher offer on the grounds that it came when the money was not needed and when company prospects were extremely bright. They maintained that company properties worth \$40,000,000 were carried on the books at \$14,000,000, and that there were such other factors which make Hudson worth more than would appear on the surface—and would, therefore, make the Fisher offer comparatively lower than was indicated.

There was no manifestation in the meeting of stock interests of leanings of Floyd Odlum and his Atlas Corp., recent buyers of at least 50,000 Hudson shares in the open market.

## Weirton Workers Get Retroactive Wages

Weirton, W. Va.

• • • Employees of the Weirton Steel Co., have received checks covering the retroactive pay increase directed by the War Labor Board in November, 1944. Some 20,000 checks were distributed to Weirton employees last week in the Weirton, W. Va., and Steubenville, Ohio, plants, with payments totaling about \$1,007,000 clearing up inequities in payrolls during the past 15 months.

The increases did not affect salaried employees, but the company indicated that a straight 5 per cent increase, also retroactive to Dec. 1, 1943, is being sought for those not included in the WLB November directive.

Weirton is about the first major steel company to pay off this retroactive pay increase. Officials explained that they used a force of 90 to 105 clerical workers and kept the payroll department operating seven days a week through March, April, and thus far in May, in order that the work could be cleaned up as quickly as possible.

## Non-Integrated Steel Spokesmen Describe Price Increases "Unacceptable"

Washington

• • • Shortly after OPA announced steel price increases of May 21, the committee on non-integrated steel producers issued a statement declaring that the increases are wholly inadequate to meet serious losses of many steel companies. The committee said it would fight for further relief and that it may appeal to the Emergency Court of Appeals.

The committee is made up of representatives of small producers. They are Lauson Stone, Follansbee Steel Corp., Pittsburgh; Robert W. Wolcott, president, Lukens Steel Co., Coatsville, Pa., and R. R. Clifford, vice-president, Continental Steel Corp., Kokomo, Ind.

"The very existence of these companies and the livelihood of their employees are at stake," said the committee statement. "In these circumstances, there is no alternative but for them to continue to fight for the relief to which they are lawfully entitled. Serious consideration will be given to an appeal from this ruling to the Emergency Court of Appeals.

"In arriving at its decision, the OPA disregarded major factors of cost in the business of small companies. It overlooked the fact that the cost of raw materials to a small company which must buy these materials outside is higher than to a company which makes its own.

"It has refused to take into account the amortization of emergency war facilities, notwithstanding the fact that this is an item of deductible cost recognized by the Treasury Department. Most companies with war expanded plants are attempting to amortize them under the government's 60-month plan.

"The OPA is required by law to correct prices for any products show-

ing an out of pocket loss. Such losses for various carbon steel products were ranging up to \$9 a ton, before the recent wage advance.

"Against these losses, the amount restored by the OPA by the present increase and by the interim increase early this year, averages only about \$2 a ton on the total output. Even that gain would disappear if current large volumes were to drop.

"Profitable business is rapidly disappearing in steel. One typical company which last year was showing a loss on 70 per cent of its total business, is now showing a loss on 90 per cent. This is partly due to cutbacks and changes in war orders. Higher-priced specialty items needed at the height of the war effort are in constantly less demand.

"The situation all points up to the fact that the present price increases are unrealistic and wholly unacceptable to the non-integrated companies."

## Fisher Brothers Make Bid for Big Block Of Hudson Motor Stock

Detroit

• • • An offer has been made to Hudson Motor Car Co. in behalf of the Fisher brothers for 400,000 shares of treasury stock at \$22.61 per share. This development was revealed at last Monday's stockholders' meeting, but no action was taken on it and the indication was that the company management favored its rejection.

Possibility was seen of a proxy fight by stockholders interested in bringing the Fishers into the company to capitalize public interest and stimulate product development. Representation of about 440,000 shares of Hudson's 1,589,000 outstanding



## Medium Artillery and Mortar Shell Cutbacks Not as Great as Anticipated

### Pittsburgh

• • • The cutbacks in the medium artillery shell and the mortar shell production programs, made at an Ordnance Department meeting in St. Louis during the past week, were not as severe as originally expected. This is believed to have resulted from the fact that Japanese artillery encountered at Okinawa was far better than originally expected and, perhaps in certain instances, better than what American forces had available.

Consequently, expected cuts in the 60 and 81 mm. mortar shell output were not made, and the production programs for these items remain exactly as originally planned. However, such was not the case with the 105, 75, and 90 mm. shell program.

In the Pittsburgh district, Oliver Iron & Steel Corp.'s West Pittsburgh plant was taken out of the 105 mm. high explosive shell program completely. Originally, this plant had a schedule for about 100,000 shells a month, but the best month to date only yielded 12,000 shells. However, in the past couple of weeks major improvements in production have been made, but the entire contract was cancelled effective June 1.

Oliver will continue at reduced rates of production on other items for Ordnance, such as fuse hole nose plugs, bomb noses for 500 and 1000 lb. semi-armor piercing bombs, lifting plugs for heavy shells and other pieces. The production program on these is expected to carry on through to the end of the year.

Louis Marx Co., at McMechen, W. Va., was cut back on a 105 mm. high explosive shell contract. The schedule at this plant was reduced from 75,000 to 60,000 shells a month. Pressed Steel Car Co., at McKees Rocks, was reduced from a monthly schedule of 75,000 105-mm. high explosive shells to one of 35,000 shells, and Pullman Standard Car Mfg. Co., Butler, Pa., which has had an enviable record on 105 mm. shells, was reduced from 40,000 to 30,000 shells per month.

On the 75 mm. chemical shell program, Armstrong Cork Co.'s plant at Beaver Falls, Pa., had a reduction in scheduled output from 70,000 to 30,000 shells per month. The 90 mm. high explosive shell program in this district was an exclusive contract with National Tube Co., at its Christy Park Works in McKeesport. This program

received a severe slash, being reduced from 130,000 shells per month to 75,000.

Programs closely allied to the shell program also were trimmed this week in order that production would not get ahead of actual shell production. American Bantam Car Co., Butler, Pa., will run out a schedule of M-13 cartridge storage cases in June. The schedule on this item at the Butler plant has been for 150,000 per month. Tracey Mfg. Co., North Side, Pittsburgh, had its schedule for 100,000 M-19 cartridge storage cases reduced to 30,000 per month. Palley Mfg. Co., Pittsburgh, another producer of M-19

cartridge storage cases, was reduced from 100,000 to 50,000 per month until August, and after that production will cease entirely.

Walworth Co., Greensburg, Pa., which has been working on a fuse contract, was not cut back at all. This producer has been somewhat behind in its schedule on this item. International Nickel Co., Huntington, W. Va., will discontinue the production of rotating bands for shells in July. Production here on this item has been at the rate of about 1,000,000 a month on two sizes. Inco went into production on this item when copper and brass goods producers could not handle the job in the quantities required, and, now that the demand has been reduced and production capacity upped in other companies, Inco is anxious to step out of the picture.

## Cancellations Slow In Making Appearance At Many Ohio War Plants

### Cleveland

• • • Cutbacks and cancellations, which were expected to surge through Ohio's production centers in a flood following VE-Day, were merely trickling in last week, some 14 days after hostilities in Germany had ceased.

It was reported here that production of several items in the munitions program, including shell containers, cartridge cases, fuses and primers had been cut at least 50 per cent, but few companies directly engaged in ammunition manufacture have been affected as yet.

Euclid Case works of the Chase Brass & Copper Co., received a cutback in cartridge cases, but company officials said that other work had been increased commensurately. About 100 workers have been laid off at Geometric Stamping Co. because of an artillery cutback which has affected at least five other companies here, including Sommer & Adams Co., Parker Appliance Co., P. A. Geier Co., Lees Bradner Co. and Commercial Forgings Co.

Sommer & Adams Co., makers of machine tools for the 155 mm. howitzer and the 8 in. shell program, received a 15 per cent production cut but none of the firm's 120 workers will be laid off. Parker Appliance Co., one of the nation's largest manufacturers of aircraft fittings, transferred 100 workers employed on a fuse program to other departments

because the order had been canceled.

Lees Bradner Co., Commercial Forgings Co. received 10 per cent cuts on their 8 in. shell contracts, and the P. A. Geier Co. received a "paper cutback" on a fuse contract received last December which boosted its production about 100 per cent. About 25 per cent of that increase has now been canceled.

Cutbacks in some of the tank programs has resulted in an 8 per cent cut at the Ferro Machine & Foundry Co., and a 5 per cent curtailment at the Cleveland Hardware & Forgings Co. Decrease in jeep component requirements brought a 5 per cent cut at Superior Foundry.

More than 200 employees of the National Aluminum Cylinder Head Co. have been laid off because of a cutback in the production of Flying Fortresses, according to company officials. William I. Neimeyer, executive vice-president of the firm, said the workers were "temporarily discharged" over the week-end following cancellation of a war contract for Studebaker cylinder heads used in the big bombers.

Cancellation of the B-17 subcontract marks the first serious cut-back to occur in this area since V-E Day. Mr. Neimeyer said efforts were being made to absorb the workers laid off, in other jobs in the company's plants.

In Dayton, termination of the .50 cal. machine gun contract at the Frigidaire Division of the General Motors Corp. was announced.

Under way at Frigidaire since June, 1941, the machine gun contract is to be terminated on a schedule by which

## Artillery Component Cutbacks Range from 33 to 60% of Production

### Chicago

• • • Sharp cutbacks in current nation-wide production levels and medium and heavy artillery ammunition have been announced by the Army, following a conference with officials of WPB, WMC, and contractors.

The adjustments affected production of boosters, time train rings, and three different types of ammunition fuzes. The changes in these programs were approved by the Production Readjustment Committee of the WPB.

The majority of companies received immediate cuts ranging from 33 to 60 per cent of current production, while 24 companies received complete contract cancellations. The 24 complete cancellations were principally at the manufacturers own request to reconvert to civilian production and in several instances work had not been started on scheduled production. The cut from current production amounted to approximately \$2,750,000 in the Chicago Ordnance District.

In order to safeguard against future needs, it was explained that it was necessary to keep most of the plant facilities operating on a reduced basis.

On the basis of consultation with the manufacturers at the meeting in Chicago, it was estimated that 7500 workers in the affected plants, engaged in fuze and booster production will be released. In some cases it is expected that normal manpower turnover will absorb most of them, while the balance will be aided in finding employment by the War Manpower Commission, in order to fill the needs of other war plants.

Plants in which manpower forces are expected to be affected at once in the near future by the cutbacks are: Scripto Mfg. Co., Atlanta, Ga.; Trail Metal Products, Miami, Fla.; Wright Machine Co., Worcester, Mass.; Electric Autolite Co., Toledo, Ohio; Parker Appliance Co., Cleveland; Detroit Brass & Malleable Works, Detroit; American Viscose Co., Roanoke, Va.; Kaiser Industries, Scranton, Pa.; General Machine Mfg. Co., Berwick, Pa.; Warren Webster, Camden, N. J.; Robertshaw Therm Co., Youngwood, Pa.; Lamson Corp., Syracuse, N. Y.; Noble & Wood Co., Hoosick Falls, N. Y.; Union Fork & Hoe Co.; Rome, N. Y.; Domestic Mfg. Co., Inc., Los Angeles; Lamb-Grays Harbor, Hoquiam, Wash.; Scovill Mfg. Co.,

Waterbury, Conn.; Du Greniere Mfg. Co., Haverhill, Mass.; Schaible Co., Cincinnati; Aircraft Engineering Industries, Beverly Hills, Calif.; International Harvester Co., St. Paul, Minn.; Bowser, Inc., Ft. Wayne, Ind.; Chicago Electric Mfg. Co., Chicago; Speed-O-Print Corp., Chicago; Collis Co., Clinton, Iowa; Litho Equipment & Supply Co., Chicago; Continental Gin Co., Birmingham, Ala.; Grenada Industries, Grenada, Miss.; Hoover Co., Massillon, Ohio; Talon, Inc., Meadville, Pa.; Federal Screw Works, Chelsea, Mich.; Supreme Knitting Machine Co., Brooklyn; Congoleum-Nairn, Inc., Marcus Hook, Pa.; Martin & Swartz, Inc., Salisbury, Md.; Philco Corp., Philadelphia; Chrisholm Ryder Co., Niagara Falls, N. Y.; Commercial Controls Corp., Rochester, N. Y.; Devine Bros., Utica, N. Y.; Elastic Stop-Nut Co., Lincoln, Nebr.; Warner Mfg. Co., Glendale, Calif.; Casco Products Corp., Bridgeport, Conn., and Springfield, Mass.; Norwalk Lock Co., South Norwalk, Conn., and Wallace Metal Products, New Haven, Conn.

Although other contractors received cutbacks of varying amounts, names were not released.

## Cutbacks or Canceled Orders in Pittsburgh Exceed \$200,000,000

### Pittsburgh

• • • More than \$200 million worth of war orders have been canceled or cutback in the Pittsburgh area since VE-Day, according to the Smaller War Plants Corp. The SWPC expects that it will be able to aid about 1100 small companies in the district to reconvert to peacetime activity. Calls have been coming in daily from the small plants, according to A. P. Davies, district manager of SWPC, and the organization is prepared to aid these small plants.

While the job of reconversion is undoubtedly a major one, especially to the smaller plants in the nation, small plants here have shown a great deal of enthusiasm in getting their war contracts canceled and out of the way.

One large supplier of plant equipment indicated that there was not much on hand in the way of inquiries from plants desiring to reconvert their facilities to peacetime production.

production will be curtailed gradually on a decreasing monthly basis.

Several thousand Frigidaire employees will ultimately be affected by the termination of this contract, but the company expects to be able to utilize most of them.

In Ashtabula, some plants have received fairly substantial cutbacks on their war production. The American Fork & Hoe Co. Ordnance Works, which makes bayonets, is to reduce production 50 per cent; the McKinnon Iron Works, 30 per cent, and small cutbacks have been ordered for the Dunne Rubber Co., Item Fibre Co., Lake City Malleable Co., and the Ashtabula Bow Socket Co. However, the Aetna Rubber Co. and Mercury Equipment Co. have received additional orders.

Youngstown's United Engineering & Foundry Co. has laid off 100 ordnance workers because of a cutback, company officials disclosed this week, bringing to 2206 the workers laid off in nine Youngstown district plants as a result of curtailed war production. United Engineering's ordnance department is now operating at 60 per cent to 70 per cent of capacity.

Mullins Mfg. Corp. plant at Salem laid off 300 workers, according to the War Manpower Commission, but Mullins officials said this week that they had received no contract cancellations at either the Salem or Warren, Ohio, plants. According to company officials, 250 women were laid off temporarily about two weeks ago because of a model change in a Navy contract, but in the meantime, the plant has been setting up new machinery to handle the new model and those women laid off will be called back to work within the coming week.

Officials of the Federal Machine & Welder Co., Warren, Ohio, denied WMC reports this week that they had laid off 100 workers. Instead, stated that they had filed applications for 130 more workers.

Brig. Gen. R. E. Hardy, chief of the ammunition branch of Army Ordnance Department, was in Cleveland this week with his staff to meet with representatives of nearly 100 companies producing ammunition throughout the nation. According to reports, Gen. Hardy refused to make any comment except that announcement would be made out of Washington soon and it is believed that about 300 manufacturers throughout the nation will be affected by the meetings here and those in Chicago and Cincinnati.



## Pittsburgh Strike Wave Hits J & L Soaking Pits and Steel Foundry

### Pittsburgh

• • • After a strike in its soaking pit department at the Pittsburgh works, Jones & Laughlin Steel Corp. indicated that new crews, which replaced the strikers, would have the pits working to capacity by the end of this week. The strike, resulting from a dispute that was decided against the strikers by the War Labor Board and the union, started midnight May 13, and on May 17, the company issued an ultimatum to the strikers that if they did not resume work midnight Thursday, May 17, it would be taken as an indication that the men wished to forfeit their jobs as well as pensions, seniority, and vacation pay.

Only a few of the 64 strikers appeared to go back to work. These will form the nucleus of the new crews, which are being recruited throughout the plant. As the jobs require special skills, the operations at the soaking pit could not be resumed at full scale until men were trained. Work was resumed on May 21, and by the end of the week it was expected that the operations would be up to normal.

The strike of the 64 men at the soaking pits stopped production in rolling and finishing operations, causing another 900 CIO workers to be without jobs. Ingot production was continued throughout the strike, with the company stocking ingots. However ingots stocking reached the point late last week where it was no longer

advisable, and production was curtailed.

The strike was in protest against a rate schedule set by an arbitrator of the Regional War Labor Board. Both the company and the union accepted the decision, but the workers affected rejected it. As a result they were given no support by the union. A company spokesman indicated that there was no argument with the union. Union officers tried vainly to get the men back, some of them working day and night on the case.

• • • Pittsburgh had itself a minor wave of strikes during the past week involving a variety of different types of operations. In addition to the soaking pit crew strike at Jones & Laughlin Steel Corp.'s Pittsburgh works, there were several others.

Most serious was that at the Pittsburgh Steel Foundry Co., Glassport, Pa., where 1500 steelworkers were made idle by a strike of crane men. Issues involved were incentive pay and scale increases. The strike ended midnight, May 20, when it was decided that the dispute could be settled through contract channels. The strike started midnight, May 15.

Shell line workers at Pressed Steel Car Co., McKees Rocks, walked out after a controversy over allowances for scrapped material. Intervention of Army officers to protect Army interests, and of a government conciliator, was expected this week. The shell

contract of Pressed Steel Car Co. was reduced by the Army from 75,000 to 35,000 105-mm. high explosive shells per month in this week's shell contract cut back program.

Other strikes in the district included Liggett Spring & Axle Co., at East Monongahela, and the Federated Enamel Division of American Smelting and Refining Co., Pittsburgh, which ended May 17. The Liggett strike is over rate structures, and will be worked out by management-union officials. The Federated strike resulted from a reduction in working hours from 48 to 40 hours a week.

## Reconversion Cost Steel Industry Two Hundred Millions

### New York

• • • To reconvert plants and equipment to handle the expected production of steel for non-military and civilian use, steel companies are planning to spend more than \$200,000,000, the American Iron & Steel Institute said recently following a survey of companies in the industry.

The reconversion process is expected to spread over a considerable period, and will be carried on with the approval of the federal war agencies.

Reported costs of reconverting steel plants do not include any expenditures which individual steel companies may be planning to broaden their operations in the postwar period.

Part of the \$200,000,000 will be spent for reconverting to peacetime production the big continuous wide-sheet mills, which during the war were adapted to permit the rolling of large tonnages of heavy plates for shipbuilders, etc. Other reconversion tasks facing the industry include realignment of steel fabricating departments and plants from production of such war goods as deck houses for merchant ships, artillery shells and tank armor to production of commercial products.

The estimated cost of reconverting the steel industry is less than 10 per cent of the total amount of money spent since 1940 by the steel industry and the government to expand and supplement steel plants.

Since that year steel companies have provided \$1,310,000,000 of their own funds for the war expansion program, while an additional \$1,095,000,000 in government money was provided for the same purpose.

**CONCRETE SHELTERS:** In order to afford protection from constant bomber attacks made on German trains, railway engines were equipped with small concrete shelters fitted into the tender.





## Jones & Laughlin Expansion Program Planned to Cost \$3,000,000

### Cleveland

• • • A \$3,000,000 expansion program, including the installation of new cold rolling, annealing and tempering equipment, at the Riverside plant of the Jones & Laughlin Steel Corp., and a layoff of 350 foundry workers at the Lakeside plant of the Otis Works, were disclosed by the company this week.

Scheduled to start as soon as War Production Board permission is given, probably within the next few months, the new program will make no change in the capacity of the plant, and according to a company official, no ton-

nage will be lost during the construction period.

Prior to the war, the Riverside plant was extensively tied up with heavy hot rolled products, and the primary purpose of this expansion of facilities is to provide greater diversity of flat rolled products.

With more than 50 years of production behind it, the old steel castings division of the Lakeside plant will be shut down when present contracts are completed and first layoffs, according to a company executive, are scheduled to begin in about five weeks. They will continue gradually during the next three months as the work in the various departments is completed. The

350 foundry workers will probably be absorbed into other foundries.

While the shut-down of the foundry ends Jones & Laughlin's casting operations entirely, the open-hearth and the 15-in. plate mill at the Lakeside plant will not be affected. Total employment of the Otis Works is about 4200 at the present time, and about 1000 of the workers were employed at the Lakeside plant.

A company official stated that the Lakeside foundry would have been shut down much sooner had it not been for the war and that the company's casting facilities have been out-moded by several other foundries built by the government since the war.

Castings ranging in weight from one pound to 200,000 lb., most of them for machine tools, presses and heavy machinery, were made at the Lakeside foundry.

## Domestic Railroad Car Output About 4800 Cars Behind Schedule

### Pittsburgh

• • • Carbuilders are currently running about 4800 cars behind on domestic building schedules, and at the present time there are no domestic inquiries out for railroad cars. Despite the overwhelming need for cars by domestic roads, lack of manpower and the high rates of absenteeism in carbuilders' shops are raising havoc with car output.

Meanwhile, however, there is a great deal of activity in carbuilding circles for railroad rolling stock for foreign countries. The Brazilian program, by no means a minor one, is moving ahead at a rapid rate. Pullman Standard Car Mfg. Co., Butler, Pa., finished a Brazilian order recently for 500 46-ton box cars, and will complete this month another 170 66-ton ore cars.

The ore cars will go to the National Steel Co. of Brazil. Pressed Steel Car Co., McKees Rocks, Pa., is working on orders from Brazil for 1850 40-ton box cars, 750 other type box cars, and 250 gondolas. Pullman-Standard at Butler is also working on orders for 100 33-ton flats, 200 33-ton boxes, and 200 66-ton flats for Brazil. There is also talk of an additional 2000 cars as part of the export program for Brazil.

For third and fourth quarter production, there are inquiries out from the Army for 8250 cars for France.

Orders for 1500 40-ton Army design gondola cars were placed this past Tuesday (May 22), and orders for 6750 20-ton box cars of French design will probably be placed next week.

Russia will get 5000 flats, 665 tank cars, and 500 dump cars, delivery of which will start in July under the Army carbuilding program. These are all steel jobs, very heavily constructed. Also, the proposed program, not yet approved and with no in-

quiries out as yet, calls for about 35,000 cars for Russia in 1946.

On top of this, there are proposed plans for a very extensive carbuilding program for 1946 for cars for France, India, Belgium, Czechoslovakia, and other countries in Europe. These are expected to be for first quarter, 1946, construction.

With the demand for cars for domestic use so critical, it is difficult to understand just why there are currently no car inquiries out. Even though carbuilding is behind schedule, this lag is not so serious that it cannot be cleaned up in a matter of a few months.

**FORMER SUB PEN:** Evidence of the damage caused by the 22,000 lb. bomb dropped by the R.A.F. Bomber Command on the Valentin submarine works at Farge, north Bremen. The bomb penetrated the steel reinforced concrete roof 15 ft. thick.



## CIO Executive Committee Meeting To Discuss Steel Plant Foremen Unions

By THOMAS E. LLOYD

### Pittsburgh

• • • High on the agenda at the executive board meeting of some 40 district representatives and the international officers of the CIO-USWA, to be held in Pittsburgh beginning May 24, is the subject of unionization of foremen. Unionization of foremen is moving forward in the steel industry, quietly but effectively. Meanwhile the steel industry sits back to see what the automotive people in Detroit will do about the organizational drives. While the steel workers' end of CIO has little interest in foremen unions, the CIO as an organization is considering the subject seriously.

That the foremen have a just complaint is generally recognized throughout steel industry management, but the laxity with which the problem is viewed is nothing short of appalling. The only efforts being made so far as can be determined are in finding ways and means of prohibiting the organization of any union of foremen, instead of attempting to cure the ills that have caused foremen to want to organize.

As far as is known, there has been only one steel company approached with a filed petition by the foremen to organize, and that is at the Gary Sheet and Tinplate plant of the Carnegie-Illinois Steel Corp., but also regarded as imminent is a similar petition expected to be filed by the foremen of the Columbia Steel Co., on the West Coast. The Gary foremen filed for membership in the Foremen's Association of America, while the Columbia petition is expected to be for an independent union.

In an article on the possibilities of foremen unionization in *THE IRON AGE*, April 15, 1943, page 83, T. C. Campbell, then Pittsburgh Editor, summed up the complaints of the foremen neatly. He said: "Some foremen say that many men in their departments, working overtime schedules at good premium pay, have been getting more money than the foremen themselves." Foremen are on stabilized salaries, the schedules of which have been built up so that in normal times they receive 25 to 30 per cent more than the top rate job under the foremen's jurisdiction. Five years of war production have thrown the differential completely out of kilter. Basically,

what the foremen want and intend to get through unionization is more money. Following that, they want to regain the prestige formerly held by foremen but eliminated by unionization of workers under the foremen. Union leaders and grievance committees invariably by-pass the foreman and go to top management for adjustments. This was formerly the foreman's job, and his loss of prestige is resented.

The foreman is management's only real emissary to the workers. Without the foreman, the break between management and labor is as abrupt as a chasm between mountains. By the same token, labor's original representative with management was the foreman, but unions have completely eliminated this. It is to the best interest of management to preserve all the dignity possible for the foreman; give him a real break in salaries, and re-

spect him as a part of management. Instead, he has been the buffer for every one in the plant—getting the needle from the general and production superintendent's office, the safety man, the maintenance department, the workman, the union, and, in addition, spurring such activities as safety rallies, bond sales, and credit unions. In total, the foreman is the scapegoat of everyone, and when he gets home his wife bedevils him for higher pay envelopes because the costs of clothes, food, and living are constantly mounting.

That management sees unionization of foremen as dangerous goes without saying. Already, most companies have been informally approached by the foremen with regard to unionization, but each company is fighting its own battle to prevent organization because it believes the best interest would not be served. Foremen unionization has become a reality in the automotive industry, even though such unions have not as yet been certified by government agencies such as the War Labor Board and the National Labor Relations Board. The steel industry, however, apparently intends to wait and see what happens when the automotive people take the certification of a foreman's union to court to test its legality rather than attempt to remove the causes for organization.

Instead of fighting the unionization drive as individual companies, a concerted move on the part of the steel industry to eliminate the troubles that have developed in the past five years among foremen would be far more effective. Remove the causes of unionization and, especially with foremen, unionization activity would likely disappear. It is firmly believed by many observers in the steel industry that the foremen do not especially want a union, but they are being forced into it by top management in order to protect themselves.

There are three major movements toward unionization. One is through the CIO, another is through the Foremen's Association of America, and the third through a more or less educational group headquartered in Dayton, known as the National Foremen's Association. Along with these are independent company unionization drives among foremen, but it is practically a certainty that should the united efforts succeed, the individual company foremen's unions will be stifled the same as were the company unions in the steel industry when the CIO moved in.

A complete change of manage-

### Foremen Union Test

#### Detroit

• • • A court test of the decision of the National Labor Relations Board to recognize supervisory unions as suitable bargaining agents has been agreed upon here in the Packard Motor Car Co. case.

The Foreman's Association of America, independent union, was certified recently by NLRB as a proper bargaining agent for Packard foremen, and the FAA subsequently won an election at Packard.

At a meeting last week, George T. Christopher, Packard president, advised Robert H. Keys, FAA president, that Packard desires to institute a court determination of the constitutionality of the NLRB action, and asked the cooperation of FAA to test the point. To start off this legal procedure, Mr. Christopher said that Packard would refuse to meet with the FAA as the representative of company supervisors in collective bargaining.

The next move, therefore, will come from the foremen's union, which is expected to go into the U. S. Circuit Court of Appeals to seek injunction action compelling the motor company to negotiate as ordered by the Labor Relations Board.



## Aluminum Cut Follows Senate Inquiry on Canadian Buying Policies

By JACK R. HIGHT

### Washington

• • • Slashing of the Aluminum Co. of Canada's latest contract with Metals Reserve Corp. for aluminum purchases is regarded here as an aftermath of demands for such action by American industry before Senate subcommittee hearings held here in recent weeks. The contract as announced originally covered the purchase of 250,000,000 lb. of aluminum. The contract was reported at the time of the announcement to include a cancellation clause permitting reduction of the order by 60 per cent. The action announced last week by the Canadian firm in Montreal was the invocation of this clause.

Culminating weeks of evidence presented before Senator J. C. O'Mahoney's Small Business Committee hearings on the future disposition of the government owned light metals industry, Secretary of the Interior Ickes last week described the construction of the Canadian firm as a secret, and a "surprise to him until he read about it in 1943."

*For the announcement of the Canadian construction plans see THE IRON AGE, issue of May 22, 1941, p. 111. For a detailed discussion of the Saguenay development see the issue of April 5, 1945, p. 113.*

The Secretary continued with an attack on the method of granting priorities to the Canadian firm for critical hydro-electric machinery, which, according to testimony already presented to the committee, prevented the completion of powerhouses at the Interior Department's pet Bonneville Power Administration.

According to sources here, the particular priority assistance which proved crucial in the 1941-42 struggle to get aluminum for the growing aircraft industry with all possible haste was for the completion of the giant rotor shafts for the powerhouse.

The forging was a difficult task, with a hole to be drilled through the center after forging to reduce strain. There were but a handful of facilities in the country which were equipped to undertake such a task. Early scheduling on the shafts promised all haste for delivery to the Canadian plant at Shipshaw, as the full scope of the aluminum production job to in-

clude Bonneville had not yet been realized.

At a somewhat later date, when development of the Pacific Northwest was recognized to be necessary, rescheduling meetings were held to review the assistance planned for both projects. The reviewing joint Army-Navy board, which considered the priorities, discovered that much time could be saved if the forgings could be used without drilling the hole through the center, and asked Bonneville engineers if they could be used in such form. While these men sought authority to make their reply, the representative of the Canadian firm gave an immediate affirmative answer.

Impressed at this assurance, that weeks of production time could be saved was given so promptly, the Army and Navy officers ordered the shafts to Shipshaw. Canadian engineers felt that although the maximum life of the shafts would doubtless not be realized if run without the strain relieving hole, they would certainly last until Hitler was defeated. The shafts are still running in the Saguenay River plant, without the telltale holes.

## Controls on Stainless Steel Output Retained

### Washington

• • • While WPB has revoked M-126, a blanket iron and steel conservation order that cut completely across the civilian economy, controls of stainless steel formerly exercised through this and other limitation and conservation orders, have been maintained through the issuance of Direction 2 to M-21.

The new direction provides that stainless steel may not be processed or fabricated except:

On an authorized CMP production schedule.

When obtained from consumers' idle and excess inventories as stipulated under the provisions of Priorities Regulation No. 13.

When the metal was in the consumers' plant prior to May 12 (the effective date of this order).

When obtained from steel warehouses as provided in CMP Regulation 4.

ment's attitude toward foremen is said to be a necessity. Management as a whole realizes this, but does little about it. In the past week, three foremen representatives met with a steel company official with the purpose of having the company recognize a foremen's union in one of its plants. Since the company had an exclusive CIO bargaining contract, it was impossible for management to recognize any other union. In the course of the conversation, the purpose of the unionization drive finally came out. Despite many complaints, the only real and true theme was "more money for the foremen."

While sluggish attitudes have been maintained by many steel producers, there have been some which have tried to go at the problem intelligently. One company at present is attempting to get through the War Labor Board adjustments in foremen's pay that will again bring him top pay in his department. This company indicated that getting these increases is very difficult, but expressed willingness to go through with these difficulties now in order to avoid unionization. Furthermore, this same company feels that foremen have not been dealt with too fairly and is attempting to clear up the complaints.

One example showing the direction of another steel company's thinking in regard to foremen unionization was offered by a steel official. When asked what the company would do if its foremen got union recognition, he replied, "Well, I guess we'll have to change the foremen's titles to assistant general superintendents so that they will now be allowed to join unions."

## Reynolds Metals Earns \$6 Million in Quarter

### New York

• • • Consolidated earnings of Reynolds Metals Co. and subsidiaries, before deduction for taxes and amortization of emergency facilities, aggregated \$6,610,637 in the quarter ended March 31 compared with \$4,500,181 in the same period of 1944.

After provision of \$4,038,800 for taxes and of \$1,152,431 for amortization in excess of normal depreciation on facilities, the consolidated net profit for the quarter amounted to \$1,419,406 compared with \$919,296 for the first quarter of 1944.

The consolidated net earnings for the quarter were equal to \$1.32 per share on the common, compared with 83c. in 1944.



## No Transport Plane Deliveries Seen Much Before Early 1946

### New York

• • • Little possibility of new transport plane deliveries to the air lines is seen before the first quarter of 1946, despite the recent relaxation of manufacturing restrictions by the WPB. Trade sources feel that Curtiss-Wright and possibly Douglas will be among the first to actually make deliveries of civilian planes.

To lend further assistance in the reconversion of a portion of the aircraft industry, WPB announced last week an order P-47-a urging manufacturers to use idle or excess men, materials, and plant facilities for the production of civilian transport aircraft. The order recognized such production as an essential "war supporting" activity, but offered little aid in the solution of pressing manpower problems which will considerably delay any production.

Important segments of the industry's engineering staffs were protected from the Selective Service despite their low average age. The new status of civilian production will not protect them, and it would seem difficult for any of the firms to shift older men as surplus to civilian work if any of their engineers have been deferred under extreme hardship pleas. For this reason, most manufacturers are out seeking new engineers, in a long starved market. For example, Republic is seeking 400 to get a light plane program under way by fall in its Evansville, Ind., plant.

Restrictions were also lifted this week on the production of civilian lightplanes, along with the promise from the WPB of limited assistance under the "spot authorization" plan for lightplane builders. The new order stated specifically, however, that large amounts of aid must not be expected for a considerable period of time. The air lines have already stated that there is an immediate need for 300 transports of all types, but the industry is unwilling to predict how long it may take to complete that number under present circumstances. If the war with Japan were to suddenly end, the industry is already tooled to produce 650 of existing transport types in a single month. Under any circumstances, however, the production of the 300 planes will be considerably delayed as firm orders now on the books call for production

of types still scarcely past the drawing board stage, and production of these types will await complete retooling jobs.

In preparation of the peacetime version of the C-46 cargo transport, Curtiss-Wright has made considerable progress in negotiations with the Defense Plant Corporation, the Army and the Navy for the use of facilities and equipment at the St. Louis plant, and trade sources report that DPC permission has already worked out a plan for use of government owned tools for this production.

To go forward with civilian production any aircraft plant must get the approval of the resident Army or Navy contracting officer, assuring that present and projected military aircraft production will not be delayed by the projected program. It is felt that Boeing, with its B-29 responsibilities, and Lockheed with extensive P-80 schedules will experience great difficulty in obtaining approval for civilian production. Douglas and Martin, both with big transport plans, should have less difficulty.

## Iron and Steel Rates Not Altered by ICC

### Washington

• • • The far-reaching Interstate Commerce Commission decision of May 19 ordering uniform classifications throughout the country and uniform class rates throughout the country except the Mountain-Pacific Area did not affect iron and steel products. The decision covered only class rates, excluding commodity rates under which iron and steel is moved.

As a temporary measure of relief, effective Aug. 30, for an interim period until a uniform classification of freight can be established, the Commission ordered a 10 per cent reduction in class rates in and between southern, western trunk lines and southwestern territories, and a 10 per cent increase in official classification territory. The 10 per cent reductions will also apply to movements between official territory and those territories in which the reductions were effected. The minimum charges per shipment on less than carload shipments moving at class rates were increased from 50c. to 75c.

When the permanent changes are made it is anticipated that they may in some cases amount to as much as 15 per cent of the existing class rates.

## Bethlehem Strike Costs 50,000 Tons' Ingot Production

### Buffalo

• • • Operations at Bethlehem Steel's Lackawanna plant, brought almost to a standstill for several days by a labor dispute, were gradually returning to normal early in the week. The strikers returned to work last Thursday.

Cost of the stoppage, involving 8,000 of the works' 11,000 employees at its height, was conservatively estimated at 50,000 tons of steel and \$500,000 in wages.

The walkout began May 11, when the company reduced crews unloading raw materials, because of improvements in operating methods and machinery, from eight to six men on a shift, a total of six jobs being involved. By May 14 all ingot output had been halted and finishing operations were virtually suspended the following day.

A tripartite panel of the WPB conducted a hearing in New York City on May 16, which was attended by company and United Steel Workers' representatives, and resumption of work pending arbitration was summarily ordered. That evening, Army, Navy and union officials persuaded a mass meeting of strikers to comply with the directive.

With 22 steel furnaces in production on Monday, the Buffalo ingot rate had rebounded from the 23.5 per cent low to 87 per cent. Lackawanna plant officials expected 28 furnaces to be in operation by the end of the week.

## Interpretation 15 To PR-3 Issued by WPB

### Washington

• • • WPB recently issued Interpretation 15 to PR-3 clarifying the fact that revocation of a limitation order affecting an item on either List A or List B does not in any way affect the restrictions imposed by PR-3 for either list. PR-3 covers the operation of the priorities system. List A items may be delivered without regard to any WPB preference rating. List B items are those for the procurement of which blanket maintenance, repair and operating supply ratings may not be used. Each item on the two lists, even though reference is made for definition of the items to an order now revoked, is still subject to the same definition.

## Production Quotas On Farm Machinery Lifted on July 1

Washington

• • • Lifting all production quota limitations on makers of farm machinery and repair parts, effective July 1, WPB has issued L-257-c setting up the revised procedures under which the industry will operate.

Large producers, those whose total net sales were \$500,000 or more in 1941, must obtain an approved schedule for each item they plan to make and make monthly reports of production. Schedules must be filed before June 1. There are no quota limitations for small producers, those whose total sales were less than \$500,000 in 1941. Also they are not required to file production schedules or monthly reports of production. They are, however, bound by other provisions of L-257-c particularly those relating to

preference ratings, rubber tire equipment and the applicability of other WPB regulations.

If a large producer decides to increase the output of an item beyond the quantity provided in his approved schedule he must either file a revised schedule or apply under PR-25 for "spot" authorization.

Although restrictions on making rubber-tired equipment are retained in the new order, the list of exempted items has been expanded.

Until further notice, both large and small producers will continue to receive allotments of controlled materials and other assistance under CMP-4B applications as heretofore, WPB emphasized.

Repair parts are not subject to the manufacturing restrictions of the new order, but large producers are required to file a schedule of such items for informational purposes, WPB said. Such schedules will not need approval

up material it is not anticipated that the full force of additional production will materialize immediately after July 1, and a comparatively slow start is in prospect.

After lagging during the early part of the current production year ending June 30, production has picked up rapidly in 1945 and will meet or come close to meeting scheduled goals on most items. Prompt restoration of a sharp cut in second quarter controlled materials allotments enabled manufacturers to retain their place on mill schedules because in most cases the restoration came through before any orders were cancelled. The temporary cut, therefore, had no practical effect on second quarter operations.

In a current study of the farm equipment industry, the Federal Reserve Bank of Chicago foresees a bright future. The bank points out that, contrary to common belief farm mechanization has increased greatly during the war period, quoting estimates that at the beginning of this year there were 12 per cent more tractors on farms than at the beginning of 1942 and one-third more than in 1940. There are also nearly one-fourth more grain combines than three years ago and 75 per cent more than five years ago. The number of corn pickers is said to be nearly one-third greater than prewar and more than 50 per cent above 1940. Other types of labor saving farm equipment have shown still sharper increases.

The bank points out that during the last production season just under 80 per cent of total tractor output was distributed through the War Food Administration to farmers, the balance going to export with a small demand by the Army and Navy.

The bank bases its rosy forecast for the future on three principal factors. First, the trend in mechanization of farms may be expected to continue, probably at an accelerated rate for some of the newer types of special equipment. Second, there is a large volume of unsatisfied demand from farmers for new equipment. Third, the financial status of farmers will give them purchasing power to expand their stock of machinery and unused credit facilities could provide additional purchasing power.

By and large, the industry has no major reconversion problem. Although it shared heavily in production of war materiel, new facilities were erected for most of this production and farm equipment producing facilities have remained intact.

## Farm Implement Rise Depends on Available Production Material

Chicago

• • • Complete removal of production quota limitations on farm machinery for the forthcoming production year will allow a material increase in production provided materials are made available to the full extent of schedules submitted by manufacturers, industry opinion here indicates.

Although actual production for the entire year will depend on manpower and material factors which cannot now be clearly estimated, manufacturers are thinking currently in terms of a 25 to 35 per cent increase over 1944-45 production. That would mean tractor production for the 1945-46 season slightly higher than for the 1943-44 season and implement production well above present and prewar levels. Tractor production for the 1944-45 year ending June 30 is scheduled at 155,128 units. Actual production for the 1943-44 year was 188,890 units and in 1940, 222,009 tractors were produced. On the other hand current production of implements is roughly equal to that of 1940.

Indicating that the War Production Board has not entirely crystalized its overall plans for the industry, manufacturers have, since the announcement of quotas would be lifted, received WPB inquiry as to what max-

imum production would be based on present facilities and anticipated available manpower. The manufacturers have the impression that material will be allotted to the full extent of approved schedules. Thus the additional production would not be dependent on placing unrated material orders.

Because of the difficulty in rounding

## Batcheller Resigns WPB

Washington

• • • Hiland G. Batcheller has resigned as chief of operations of the WPB to resume his duties as president of the Allegheny-Ludlum Steel Corp. He will continue to serve as chief consultant to WPB Chairman J. A. Krug. Mr. Batcheller has served WPB in several important capacities. His first position was as head of the steel division. After leaving that position he returned to WPB as operations vice-chairman. Resigning this position after completing important work it involved, he again went back to his company, but was recalled to WPB and on Dec. 8, 1944, was made chief of operations in which capacity he did a notable job in speeding up production. This was particularly true when there was a resurgent demand for material that followed the unsuccessful drive of Von Runstedt into the American lines last December.



## Industrial Briefs . . .

• **POWDER METALLURGY**—Entry of Maguire Industries, Inc., into the powder metallurgy field was disclosed recently by Russell Maguire, president, in announcing that the company had acquired the Ferrocart Corp. of America and the Micro Products Corp., both of Hasting-on-Hudson, N. Y.

• **NEW FORGE PLANT**—Construction will begin immediately on a modern force plant in Chicago for the Cornell Forge Co., it was announced recently by Clearing Industrial District, Inc. This was said to involve 88,000 sq. ft. of land, with an option on 37,400 additional sq. ft. for possible expansion, and the construction of a one-story plant containing approximately 36,000 sq. ft.

• **BUYS PUMP CO.**—The Dayton-Dowd Co. of Quincy, Ill., an independent pump company, was purchased by Food Machinery Corp., according to a company announcement. The firm will become a branch of Peerless Pump Division of Food Machinery. Clarence M. Frazier will supervise all branches of the division with H. J. McKenzie transferring to Quincy to control that branch.

• **DISTRIBUTOR**—A. Milne & Co. has been named national distributor for wrought iron bars manufactured by A. M. Byers Co., Pittsburgh.

• **SURPLUS PROPERTY**—The Office of Surplus Property of the Department of Commerce, a disposal agency designated by the Surplus Property Board, recently announced sales of consumer goods totaled \$4,889,784 during the month of April, the reported cost of which amounted to \$13,930,142. These items were mainly surpluses that were declared by the Army and Navy.

• **ELECTS CHAIRMAN**—Julian D. Dickerson of the Republic Steel Corp. has been elected

chairman of the Buffalo chapter of the American Society for Metals, succeeding George B. Michie of the Electro Refractories & Alloys Corp.

Chester M. Inman has been made chairman emeritus of the Worcester chapter, the only position of its kind in the association in the country.

John E. Comfort of Pacific Metal Co., Portland, has been elected chairman of the Oregon chapter of the society.

• **ELECTRONICS INDEX**—To provide engineers and executives with a bibliographical compilation of all radio-electronics literature issued during the 20-year period from January 1925 to June 1945 is the task set for itself by the Electronics Research Publishing Co., 238 East 44th Street, New York 17. Scheduled for publication in September 1945, "The Electronic Engineering Master Index" is now being compiled, and will contain upon completion more than 50,000 subject listings taken from 300 periodicals, including a number of foreign language papers.

This reference material will be issued as a single volume. The first edition, due to paper restrictions, will be limited to 1000 copies. Frank A. Petraglia, formerly of Federal Telephone & Radio Laboratories and Sperry Gyroscope Co., is the editor.

• **CHECK LIST**—The Chicago Association of Commerce has prepared a check list covering wage and salary controls by which employers can review their compliance during the transition period.

• **SURPLUS SALES**—A recovery rate of 90 per cent in sale of new and used surplus materials during April was reported recently by the Contract Settlement and Surplus Materials Division of the U. S. Maritime Commission, official government disposal agency for surplus marine materials.

## 12 Depots Ready To Store RFC Surpluses In Building Program

### Washington

• • • As the need for storage space for surplus war property becomes acute, the RFC announced recently that 12 of the 21 construction projects in its warehousing program had been completed or were well under way.

These 12 projects are located at Atlanta, Ga.; Birmingham, Ala.; Charlotte, N. C.; Hammond, Ind.; Dayton, Ohio; Warren, Ohio; two in Detroit; Kansas City, Kan.; Minneapolis, Minn.; New York City and Linden, N. J.

Wherever possible, RFC utilizes available factory space for disposal depot purposes but in order to store certain types of equipment, such as precision machines which require protection from weather, closed warehouse space of several million square feet is required in addition to some 25 million sq. ft. of outdoor storage space for surplus property requiring little protection for preservation.

The overall RFC warehousing program contemplated that approximately 19.7 million sq. ft. of closed space should be made available, including acquired space and new construction. This figure may have to be expanded considerably to accommodate surplus property released by the Navy which already has requisitioned 3 million sq. ft. of the closed space to be made available and has indicated that it will need an additional 8 million sq. ft. of closed storage space prior to the end of the war with Japan.

New construction completed under the RFC program through April 15 and existing properties provided 6.4 million sq. ft. of closed space. Construction of an additional 4,309,000 sq. ft. of closed space had been approved.

Sizes of new RFC storage warehouses vary. In general, however, they are in units of 50,000 sq. ft. each and are of the simplest workable type, of concrete slate laid at ground level with a column-supported flat roof, carefully designed to use a minimum of critical materials. The designs for the warehouses are flexible enough to permit substitution of non-critical material. The new warehouses are of a type considered as semi-permanent similar to those used by the Army in theatres of operations.



## Wage Rate Schedule for Plant Reconversion Endorsed by CIO and AFL

Washington

• • • With the objective of facilitating the fastest possible return to civilian production with the maximum output of war materials to fight against Japan, WLB on May 10 announced a limited program of wage structures for reconversion plants. The plan was endorsed by Van A. Bittner of the CIO and James Brownlow of AFL, who participated in a press conference at which Board Chairman George W. Taylor explained details of the program.

The crux of the plan is the foregoing of the previously required advance approval of the board in making wage rate changes. It allows them to be made independently through collective bargaining provided that they do not furnish the basis for a request for an increase in OPA prices, upon their submission directly on or before their effective date to the appropriate Regional Board or Industry Commission for post review.

The rates will be reviewed to determine whether they represent a decrease or increase in wages that does not conform to the Stabilization Act.

Any adjustments made will not be ordered retroactively, Dr. Taylor said. If there is no bargaining unit the employer is authorized to work out their schedules and immediately place them into effect and then submit them to the board for review.

If there is disagreement over any portion of the wage rate schedule, the parties may agree to install a schedule to facilitate the starting-up process subject to later modification upon such basis as may be agreed upon. In the event of disagreement upon the installation of a schedule it will be submitted to the regional board or commission with the points of agreement and disagreement set forth. If a complete schedule is not agreed upon with the advice of the regional board or commission, the National Board will be notified and determine the procedure for final settlement of the cases. If the parties are in total disagreement regarding a schedule, the disputes will be handled under the established procedure for other types of disputes.

The board outlined three methods of setting a wage structure to meet different problems.

In the case of a complete conversion of a plant, some or all of the key jobs following conversion will normally remain substantially the same in job content as before. Upon conversion the rates for these common jobs may not be changed. They are to be used, Dr. Taylor said, as guide rates for the establishment of wage rates for other jobs in the plant in such a manner as to result in a balanced wage rate structure.

Where the nature of jobs is sweeping by reason of a change in product or operations, or where civilian production is resumed in plants discontinued in wartime, the wage schedule will be fixed at the prevailing level of wages in the industry or area for comparable occupations. The board expects that this type of situation will be rare.

Where only a portion of a plant is being converted to the production of civilian goods and jobs are substantially the same as those remaining on war production, no change in rates may be made. Where rates must be set for new or changed jobs on civilian production the rates for the unchanged jobs will be used as guides for the establishment of a balanced wage rate structure. In those instances where all or most of the jobs on civilian production including key jobs are substantially changed, the rates for the jobs on civilian production are to be fixed to provide a proper balanced relationship with the rates for the jobs remaining on war production.

In any case in which a suitable wage structure is not set up under these principles, a modified one may be agreed upon but only after advance approval by the board. Should any wages agreement furnish the basis for a request for an increase in OPA prices, it cannot be made effective without advance approval of the board and any necessary action by the Director of Economic Stabilization.

### RFC Offers Wire and Cable

New York

• • • A special listing of offerings of surplus wire and cable conforming to code 25-8000 has been published by the New York office of RFC, 70 Pine St., New York 5. Practically all listings are new, unused items, and include rubber covered, galvanized steel basket weave armored cable and coaxial lead covered cable, among others. Dated May 12, the listing is identified as No. 130.



### FIRE BOMB:

Army Ordnance men prepare to load a new fire bomb into a B-17. The weapon, weighing 650 lb., is made of a jelly-like substance, burns at 1400 deg. F., and scatters its substance into cracks and crevices, thereby making it hard to extinguish.

## Structural Fabricating Shops Find Sources of Supply Satisfactory

### New York

• • • There has been anxiety in steel circles that because of wartime experience, steel consumers might in the postwar period do considerable changing in their source or sources of supply. On the basis of a survey, however, covering structural steel fabricating shops such fears are unfounded at least in that industry.

The questionnaire which is reproduced with this story was sent to a cross-section of the industry covering 125 companies. Answers were received from 63 companies, making the return slightly more than 50 per cent of those polled as shown below.

Significant were the answers to question No. 2 asking whether companies planned to use the same source of steel supply in the postwar period as they did in the prewar period. Sixty-one or 96.8 per cent of those answering said they would use the same source of supply, while two companies, or 3.2 per cent, indicated they would change their source of supply. Reasons given by these two companies involved price and delivery service.

On the question of operating levels in the industry before the war, during the war and estimated postwar activity, answers were weighted on the basis of the number of returns made at various levels. The composite operating rate before the war was 73 per cent. During the war the composite was 106 per cent of capacity, while the postwar period weighted average was estimated at 88 per cent. This latter figure is considered to be optimistic and if supported it will reflect considerable activity, because fabricating shops as a general rule do not utilize the full capacity of

their plants. Variations in replies were substantial and the composite must be taken as a rough estimate.

Apparently fabricating shops for the most part are going to stick to fabricating rather than add new work in the postwar period. Twenty-nine companies, or 46 per cent, indicated they would add new lines other than fabrication, while 31, or 49.2 per cent, said their plans did not include this feature. Three companies either were undecided or did not answer this question.

To determine to what extent the increased use of welding practice would become a permanent factor among structural steel fabricating shops, those receiving questionnaires were asked to indicate, "If welding did not predominate your methods before the war, will it after the war?" Thirty-

three companies, or 52.4 per cent, said that it would; 19 firms, or 30.2 per cent, said that it would not; four firms, or 6.3 per cent, were doubtful, and seven companies, or 11.1 per cent, did not bother to answer this question.

Since structural shops during the war were substantial users of plates, sheets and structural shapes, all of which have been tight in deliveries throughout the war period, the answers received from this industry can be considered important. Apparently steel consumers, even though "kicked around at times," have been broad-minded enough not to blame delivery or price troubles on their sources of supply. This should be a good commentary on the ability of steel companies to pass through a period in which they had little or no control on the distribution of their products even though they were in the position to bear the brunt of dissatisfied customers.

## Looks for Sales Of Over Hundred Million Dollar Volume Yearly

### Philadelphia

• • • Annual postwar sales exceeding \$100,000,000, as compared with a prewar annual volume of between \$35,000,000 and \$40,000,000 were predicted recently by Edward G. Budd, president, in his address to shareholders attending the annual meeting of the Edward G. Budd Mfg. Co.

"In planning our postwar program," Mr. Budd said, "we are taking into account the possibility that materials may be available for railway car production towards the latter part of this year. We anticipate that our new manufacturing facilities for railway car production will be

available in sufficient time to take full advantage of such material releases, when authorized by the government. The orders on hand and in prospect in this department of our business are sufficient to assure a steady production in this division for an indefinite period. We estimate that a production of between two and four cars daily will be required to meet this demand.

"Our automobile body customers, including Ford Motor Co., Chrysler Corp., G. M. Corp., Studebaker Corp., Nash-Kelvinator Corp., and International Harvester Co., have informed us of the production which they will require as soon as they are permitted to resume manufacture and the War Production Board has granted permission for us, along with the automobile industry, to provide the necessary tools and equipment. We will be able to resume production of automobile body material within the time allowed by our customers.

"Although we have received no definite assurance, we believe it likely that in the near future we shall be permitted to resume the manufacture of highway truck trailers and in this line of work, given the materials, we shall be able to get into production very quickly. Before the war our production of highway truck trailers averaged 1500 per year. The Fruehauf Co., however, who is our customer in this business, has informed us that it anticipates an annual volume of 10,000 per year."

### Returns From Fabricators

1. Before the war at what per cent of capacity did your plant run? 73 per cent (weighted average). During the war? 106 per cent (weighted average). Postwar estimate? 88 per cent (weighted average).
2. Do you plan to use same sources of steel supply in postwar as you did prewar? Yes—96.8 per cent. No—3.2 per cent.
3. Do you plan to add new work other than fabricating in postwar plans? Yes—46.0 per cent. No—49.2 per cent. Undecided—3.2 per cent. No answers—1.6 per cent.
4. If welding did not predominate your methods before the war, will it after the war? Yes—52.4 per cent. No—30.2 per cent. Undecided—6.3 per cent. No answers—11.1 per cent.

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## WPB Modifies Controls Under PR 1 and CMP 2

### Washington

••• Modification of inventory controls under Priorities Regulation 1 and CMP Regulation 2 was announced recently by WPB. The amended PR 1 also explains the disposition of amendments, directions, schedules and appendices under a revoked order or regulation.

Stockpiling is now permitted by allowing a person to receive, in anticipation of starting or resuming civilian production, the minimum amount of material he would need during the first 30 days of production, provided no priorities assistance or allotment symbol is used to get the material.

WPB reiterated, however, that its regulations limiting receipts of material still apply, whether or not the material is acquired with priorities assistance, and whether it is for civilian or war production.

Where orders have been adjusted, delivery postponed, quantities reduced or canceled as a result of contract termination or modification, the regulations now permit a customer to accept further deliveries of material already produced or in production at the time of such notice, if the producer cannot use the particular item to fill other orders on his books.

Direction 7 to PR 1 and Direction 23 to CMP 2 also have been issued.

The directions under both regulations provide additional exceptions from inventory restrictions, relating to continued receipts of special items after contract cutbacks.

Where a customer is a prime contractor or subcontractor under a contract that has been cut back (not terminated), he may continue to accept delivery at a reduced rate of any special item, when the supplier notifies the customer in writing that unless he is permitted to make continued deliveries he would be unable to resume shipments at a later date.

Deliveries, then, must be rescheduled so as to bring the customer's inventory down to the limits set under PR 1 and CMP 2 within six months. The amounts received by the purchaser cannot exceed his total requirements under his contract or subcontract after taking into consideration the amounts of the item on hand.

In PR 1 as now amended, it is stated that revocation of an order or regulation also revokes amendments, directions, schedules and appendices published under the order, unless otherwise provided. However, directions, authorizations, production or delivery schedules that have been issued to individuals under an order before its revocation remain in effect

unless expressly revoked. There are two exceptions to this:

1. Conditions imposed in connection with grants of appeals and authorizations do not generally remain in effect.

2. A person who has received a production or delivery schedule covering a specified period may make additional products or fill additional orders that do not interfere with the schedule.

"Suspension" and "consent" orders issued on the basis of a violation of orders and regulations of WPB remain in effect after revocation of the controls violated unless otherwise provided. A person subject to a suspension or consent order that he believes should be lifted because of the lifting of the restriction on which the violation was based may request relief from the Chief Compliance Commission of WPB.

PR 1 now also provides that a supplier must give an estimated delivery date to a customer who has a rating, the estimate subject to a receipt of higher rated orders.

## Works Projects In Michigan Described By Civil Engineers

### Detroit

••• Public works projects in Michigan earmarked for postwar construction total \$512,680,000, it was reported by the committee on postwar construction of the American Society of Civil Engineers.

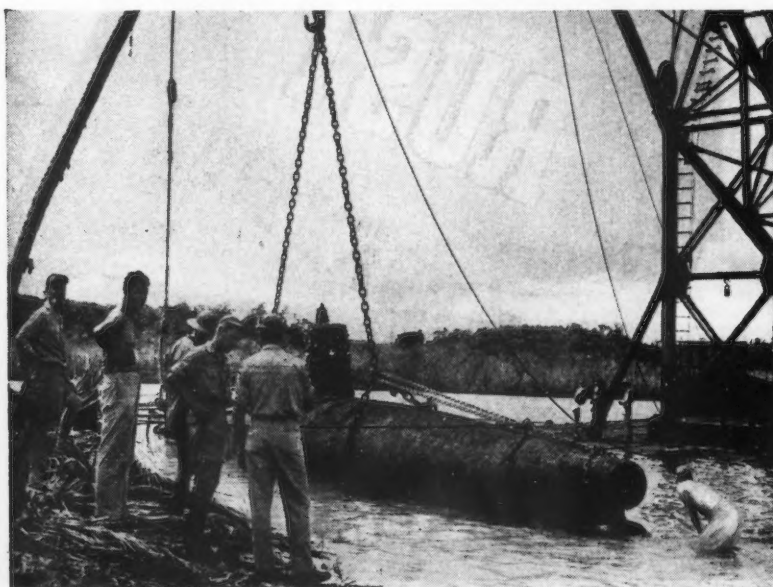
Projects include the following:

Water works .....	\$ 30,749,000
Sewerage .....	103,025,000
Roads and streets .....	62,320,000
Bridges .....	9,554,000
Earthwork .....	7,935,000
Buildings .....	144,515,000
Unclassified .....	142,774,000

Private projects classified as public works total \$11,809,000. In addition, Federal projects already outlined for the state are aggregated at \$3,500,000.

The City of Detroit has the largest share of this total, amounting to \$310,878,838. Of this, Public Works Department jobs alone account for \$162,341,770; the second largest planner being the Board of Education with \$44,763,208 in projects. The largest individual project is for a new \$6,000,000 hospital which will be part of the medical science center of Wayne University. This entire medical center project is appraised at \$20,600,000.

**RESURRECTED:** A firmly chained two-man Japanese submarine is edged in close to the beach of Tulagi Harbor, Florida Island, by the arm of a huge crane, after it had been salvaged by the Coast Guard tender Ironwood. The sunken undersea raider was raised to permit study by naval officers.





# GUESSWORK

*can be right, but*

# TESTING

*can't be wrong!*

By the time samples from a melt get through the rigorous check-testing that PSF prescribes (in such equipment, for example, as the Izod impact strength tester above, and the Brinell hardness machine at the right) we know that the analysis, physicals, and grain structure of the metal will be right for the job you want the casting to do. And for soundness and dimensional accuracy, there is no finer assurance than PSF's advanced foundry techniques give you, amplified by million-volt X-Ray inspection and the most modern machining facilities. PSF works in ordinary or alloy steels, always to a goal of *precision!*



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## RFC Completes Job Training for Sales Of War Surpluses

### Washington

• • • RFC, disposal agency for surplus aircraft, industrial plants and capital and producers' goods, has completed the training of key personnel in preparation for the biggest sales job of all time, the marketing of billions worth of property. Getting set for the tremendous task, the disposal organization, with 31 surplus property divisions, extends into principal industrial centers of the country and is being further expanded as needed manpower becomes available.

Establishing a key policy of making it easy for the public to do business with it, RFC has sent a bulletin to its offices reminding the personnel that the "establishing and maintaining of good will is of the utmost importance."

The main offices of RFC are linked by a teletype system which provides speedy exchange of information on inventories, shipping data and other matters. This system enables a prospective purchaser to promptly ascertain whether an item not carried in stock in his own region may be available in some other part of the country. An inventory control mechanism

simplifies the task of merchandizing the items.

All items offered for sale will be given wide publicity from both the Washington headquarters of the RFC and its regional offices. Now at work in Washington is a nationally-known advertising agency which will supplement an aggressive national sales campaign by the preparation, coordination and supervision of all paid advertising to be cleared through the RFC field agencies. Trade papers and local newspapers of general circulation will be used. Paralleling this activity will be an information program adapted to the over-all advertising campaign so that special articles, news releases and magazine articles describing the many phases of surplus material disposal activities can be channeled into wire press services, local newspapers, and trade journals and periodicals with nationwide reading audiences.

In addition, RFC will keep buyers posted by distributing at frequent intervals national listings and regional detailed catalogs. There is also due for early publication a brochure entitled "How to Do Business with RFC." It will be distributed nationally to those interested in purchasing surplus materials.

Purchasers of surplus goods are invited to make use of RFC credit facilities.

In cooperation with commercial banks, a system has been devised to enable industry, large and small, to obtain the financing required to make purchases with a minimum of paper work and delay. Bank loans up to 75 per cent with a ceiling of \$250,000 each are automatically guaranteed by the RFC. Direct loans to the purchaser are made where local credit is not available. Complete details about the financing may be obtained by the purchaser from his own bank or from the RFC agency in his region.

## Rifled Mortar Barrels Are Now Mass Produced Beaver Falls, Pa.

• • • The triple purpose 4.2 in. rifled mortar, which has seen action on Allied warfronts all the way from Europe to the jungles of the Pacific, has been mass produced to meet war needs by a new application of steel tubing in place of the individual hand machining of each barrel, it was disclosed here at the offices of The Babcock & Wilcox Tube Co., which developed the tubing in cooperation with the Chicago Warfare Procurement District of the U. S. Army.

The tubing, which is used for the mortar, is made of nickel steel, heat treated to the maximum strength required for resistance to shock and abuse. When it leaves the plant it requires only machining and rifling (the operation of grooving the inside of the barrel with spiral threads) before it is ready for operation. Each tube is 3 ft. 9 in. in length, with an outside diameter of 5 1/4 in. and a 1 1/2 in. wall. Before the use of tubes, each mortar was made individually by hand by a craft machinist boring the necessary hole through a steel bar by lathe. The tube company, which helped in the preparation of the specifications for the tubing, is the sole manufacturer of the tubes used in the mortar. The Bell Machine Co., Oshkosh, Wis., is the only manufacturer of the finished gun.

The tube company at present manufactures about 25 per cent of the total production of tubing used in mortar shells in this country. The same shell is used for high explosives, smoke or chemicals. Made of unalloyed carbon steel of high tensile properties, the finished shell is 4.2 in. in diameter.

**GI INGENUITY:** One Army sergeant has solved his wash day blues by rigging up a washing machine from salvaged parts.





# DEFY CORROSION

*at small cost*

## BUILD YOUR PRODUCT WITH EVERLASTING FASTENINGS

Your product must stand up in use. In many cases it will meet the destructive forces of rust and corrosion.

Foretell trouble! Use Harper Everlasting Fastenings. They're made of either brass, naval bronze, silicon bronze, copper, Monel or stainless steel. They defy rust and corrosion...and do it at small cost.

To be sure . . . a bronze bolt costs more than a common steel one . . . but not much more. In most instances, constructing a machine or an instrument with non-ferrous or stainless fastenings adds only pennies to the total cost. Percentage wise, the added expenditure is negligible. But the life of the product . . . the ability to "take it" . . . the probability of freedom from trouble are increased beyond measure.

### 4360 ITEMS IN STOCK

Harper is known as "Headquarters for Non-Ferrous and Stainless Fastenings" . . . carries large and complete stocks of 4360 different items and is continually adding others. Write for 1945 Catalog.

### THE H. M. HARPER COMPANY

2607 Fletcher Street, Chicago 18, Illinois

BRANCH OFFICES: New York City • Philadelphia  
Los Angeles • Milwaukee • Cincinnati • Houston

Representatives in Principal Cities

# HARPER

EVERLASTING FASTENINGS

BRASS • BRONZES • COPPER • MONEL • STAINLESS



## WPB Revokes More Limitation Orders

### Washington

• • • In keeping with Chairman J. A. Krug's established policy of eliminating government controls on business as soon as possible, the WPB has announced the revocation of the following orders:

**L-38—Industrial and commercial refrigerating and air conditioning machinery and equipment.** Restricts deliveries pursuant to approved orders rated AA-5 or higher, subject to specified exceptions; requires utilization of replaced parts except as specified. Limits production, except for maintenance and repair parts.

**L-59 B—Metal plastering bases and accessories.** Prohibits manufacture subject to specified exceptions.

**L-77—Metal windows.** Prohibits manufacture after 4-3-43, except to fill specific war orders, orders rated AA-3 or better, or from material put in process prior to 4-3-43.

**L-83—Industrial machinery.** Restricts transactions to approved orders with specified exceptions; establishes procedure for authorization of orders on books; regulates auction sales, court order sales and similar transactions. Does not apply to repair or maintenance orders of \$1,000.

**L-89—Elevators.** Prohibits accepting of any restricted orders or start of manufacture except as authorized; restricts use of non-ferrous metals, stainless or alloy steel.

**L-91—Commercial laundry equipment, dry cleaning equipment, and pressing equipment.** Restricts production except as authorized or to fill certain types of orders; permits certain kinds of assembly and repair parts production; restricts delivery, use, emergency repair of loans, and use of metal in parts for rebuilding.

**L-111—Hand trucks, other handling equipment.** Limits acceptance of orders to those rated AA-5 or higher, except for repair parts, establishes production specifications and certification procedure.

**L-126—Industrial and commercial refrigeration and air conditioning machinery equipment.** Prohibits related machinery from production except as authorized and to required specifications as set forth in schedules.

**L-190—Scales, balances and weights.** Restricts production, transfer, production of repair and maintenance parts, types, sizes, and materials affecting four specified types.

**L-209—Wire cloth for manufacture of pulp, paper and paperboard.** Restricts inventories of paper machine wire cloth to certain numbers and kinds.

#### L-216.

Schedule 1—Universal portable electric tools

Schedule 2—Wrenches

Schedule 3—Pliers and nippers

Schedule 4—Rotary files and burs

Schedule 7—Hack saw blades

Schedule 8—Hard edge flexible back band saws

These schedules limited manufacture to specified styles, specifications and sizes and restricted the use of metals and also the delivery of these items.

**L-222—Floor machines, rug scrubbing machines, industrial vacuum cleaners and blowers for cleaning purposes.** Limits and finally prohibits production; permits limited production of repair parts; restricts transfers; authorizes special quotas for machines, repair parts, and supplies.

**L-278—Steel pipefittings.** Limits manufacture to specified types, sizes, and specifications; prohibits manufacture of specified fittings.

**L-298—Resistance welding equipment.** Prohibits acceptance and delivery except as authorized; requires manufacturer's operations reports; requires registration of idle equipment.

**L-314—Lubrication equipment.** Restricts acceptance and delivery of orders to specified conditions; establishes production specifications and simplification of standards.

**M-21-A—Alloy iron and alloy steel.** Establishes allocation control.

**U-9—Power water, gas and central steam heat.**

**L-145—Aircraft control and pulley bearings.** Prohibits manufacture of specified sizes, except by authorized producers, as defined.

**L-151—Domestic watt hour meters.** Prohib-

its production; restricts conversion, delivery, and production of repair parts.

**M-50—Jewel bearings.** Restricts sale, delivery, processing and use.

The following orders will be retained according to WPB, at least for some time in their present or slightly modified form:

L-1-E, trucks; L-2-G, Passenger Automobiles; L-5-C, Domestic Mechanical Refrigerators; L-13-B, Metal Furniture; L-23-B, Domestic Electric Ranges; L-23-C, Domestic Stoves and Cooking Appliances, non-electric; L-257, Farm Machinery.

## Seabees Improvise With Junked Material Pacific War Theater

• • • Mobile construction equipment, improvised largely from junked materials, is enabling the Navy's Seabees to keep pace with the Pacific's fast-moving offensives.

In anticipation of fast moves requiring a maximum of mobility, one battalion constructed trailers housing a machine shop, automotive shop, blacksmith shop, hospital and galley.

Mobility is not the only advantage. Compactness of the trailer units permits their use until immediately before loading aboard ship and quick availability after landing. Due to elimination of a large number of small crates, the trailers occupy less shipboard space than that of the items crated separately.

In addition, there is a great reduction in the loss and damage to materials and tools due to exposure to weather and rough handling.

The machine shop trailer contains drawers, cabinets for tools, parts and material, also provides working space not available in the trailer which houses the machine shop proper. The automotive and blacksmith trailers are similarly arranged.

The mobile hospital unit contains storage space for medical supplies, wash basin, water tank and pump, hot water heater, sterilizer, electric hot plate, refrigerator and space for an operating table. The trailer is equipped with a 15 KW generator.

The mobile galley contains a water tank, small generator, field ranges, serving counter, cabinets for cooking utensils and ration supplies.

Another improvisation created by the same battalion is the combination shipping box-work bench. Four ft. wide, eight ft. long and three ft. high with a two-ft. top and drop sides, the boxes are mounted on skids for transportation. Interior of the boxes is arranged to accommodate tools and small parts for rigging lofts, tin shop, plumbing, electric and carpenter shops, tractor repair and galley.

The top serves as a work bench and the drop sides serve as working decks to provide an area out of mud.



**FIRST TO ARRIVE:** The first of the prefabricated houses to be sent from the United States for erection on the bombed areas of Great Britain arrived recently. It is expected that all the houses will be delivered by early 1946. (See THE IRON AGE, May 17, 1945, p. 110 for more details.)

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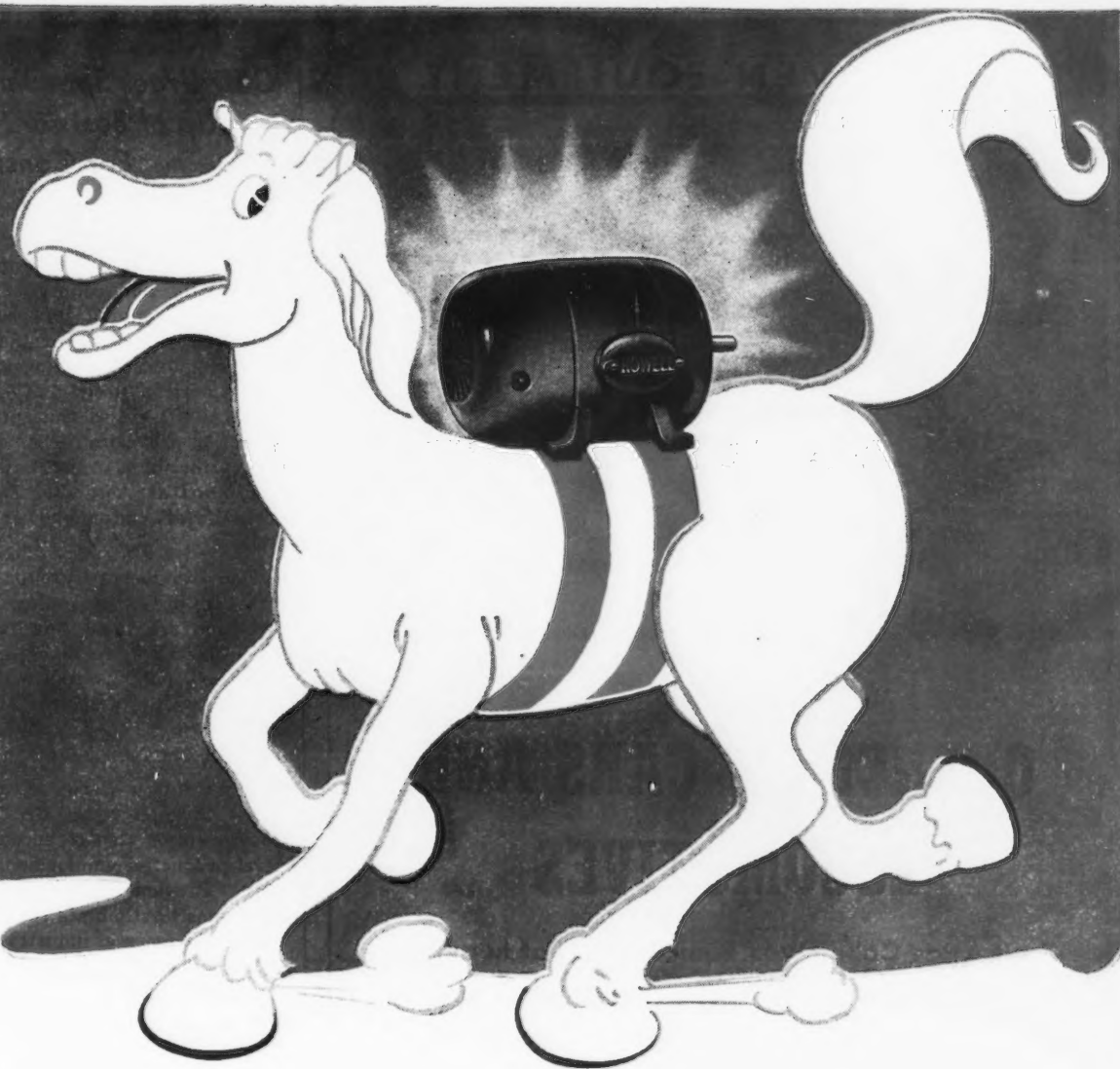
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It may come to this—

but we won't cut Howell Quality



Yes, it may even come to the point where we have to press the good old Howell Horse into service to make deliveries on our famous motors. That's how serious the delivery situation is in the entire electric motor industry today.

But there's one thing you can count on now, as always—we'll never, never cut Howell quality. Every Howell Motor is built of the finest material, statically and dynamically balanced, and thoroughly insulated throughout.

So, until the delivery situation clears up, please bear with us. We recognize our obligations fully. We are putting forth our maximum efforts to build more and more Howell Motors, and to see that they are distributed among users whose needs are most vital to the war effort. This, we know, is as you would have it.

**The Howell Protected Type Motor**, shown, gives complete protection against dripping liquids, metal chips and other falling particles. Completely streamlined—utilizing non-breakable steel frame—malleable or steel base—cast iron end plates and cast iron, weatherproof terminal box are standard construction features. Special horizontal and vertical mountings are available. Available in sizes 5 H.P. and smaller. Other sizes and types available up to 150 H.P.

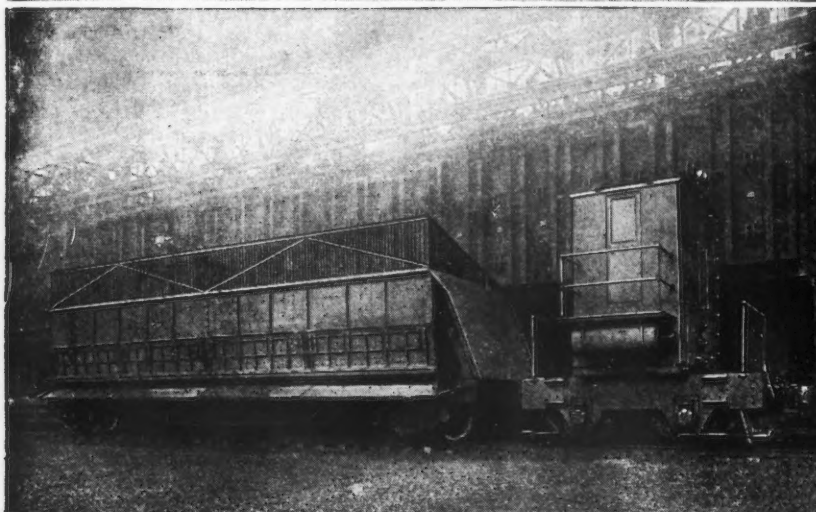
**HOWELL ELECTRIC MOTORS COMPANY**

**HOWELL, MICHIGAN**

*Manufacturers of Quality Motors Since 1915*



## COKE OVEN EQUIPMENT



## QUENCHING CARS AND LOCOMOTIVES

All Atlas Coke Oven Equipment is of heavy-duty construction permitting the peak operating conditions required in today's stepped-up production schedules. As a result of years of experience, Atlas is able to design and build equipment, to meet the requirements of each particular coke plant. Detailed information available on request.

### Other ATLAS Products

Ore Transfer Cars	Locomotives for
•	Switching and Interplant
Scale Charging Cars	Haulage
•	•
Electrically Operated Cars for	Turntables
Every Haulage Purpose	

# The ATLAS CAR & MFG. CO.

ENGINEERS

MANUFACTURERS

1100 IVANHOE RD.

CLEVELAND, OHIO, U. S. A.

## CED Urges Speeding Up of Postwar Plans For Construction

New York

• • • The Committee for Economic Development has called upon its 2800 community and county chairmen to stimulate planning for postwar construction programs in their respective communities. Acting jointly with the American Society of Civil Engineers, CED urged that private construction programs be hastened to the blue print stage so that building work may start as soon after final victory as materials and manpower are available.

The Engineers' group estimated that if proper planning and blue printing are done now more than \$15,030,000,000 worth of private and necessary public works will be ready for bids in the first year after peace. Such a program, it was said, would provide jobs for 9,000,000 workers.

In asking its local units to stimulate this planning CED took its fourth major step to encourage high level productive employment after the war. Previously it had undertaken programs to stimulate the creation of jobs in commerce, industry and agriculture.

In discussing the need for immediate blueprinting of private construction Malcolm Pirnie, chairman of the American Society of Civil Engineers Action and Advisory Committee of the CED pointed out that as a general rule it takes twice as long to get ready for a construction project as it does to build it.

"There is a shockingly small amount of construction actually ready for bids, in our opinion. That is why we urge planning now so that we may start building when materials and manpower are released from war work," he added.

He stated that during 20 prewar years, from 1920 through 1939, the value of all new construction, including maintenance, averaged 10.7 per cent of the national income. On the basis of a postwar estimated income of 140 billions dollars, the normal value of construction after victory should be 15 billion dollars annually. However delayed repairs and general maintenance work estimated to cost five billion plus estimated new construction of 15 billion indicate an annual investment in construction im-

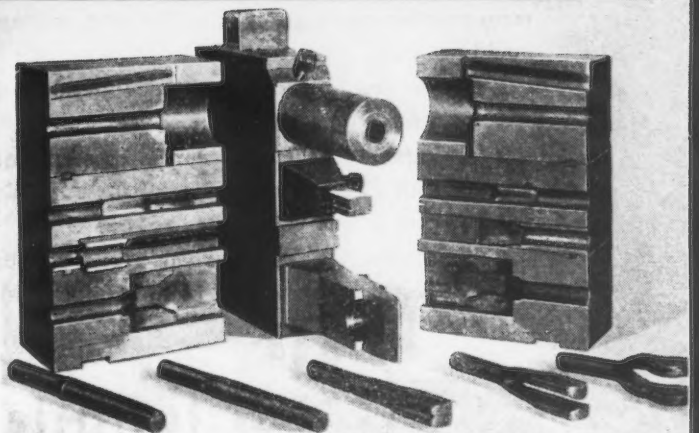
# For Fast Economical Production of Jaw Forgings



Ajax Forging Machines are of exceptional value in the production of a wide range of jaw forgings, particularly so on the ends of long rods.

In some instances, with a small size up-setter, the end of the bar is simply balled up or gathered for subsequent drop forging of the jaw in a hammer or forming in a forging press.

Where the size of the machine is ample and the jaw design suitable, it can be completely forged in the upsetter in dies similar to those illustrated. After gathering, the stock is split by the action of the die slide by closing with suitable splitting knives carried in the gripper die. After that the jaw is brought to finished form by a final upsetting operation.



Jaw Forging Dies with Progressive Forging Operations.

As a third method, where production does not warrant outlay for the somewhat complex dies with slitting knives or where the jaw is large in relation to the size of the forging machine, the slitting operation can be performed on an Ajax Hot Sawing and Burring Machine or with a cutting torch.

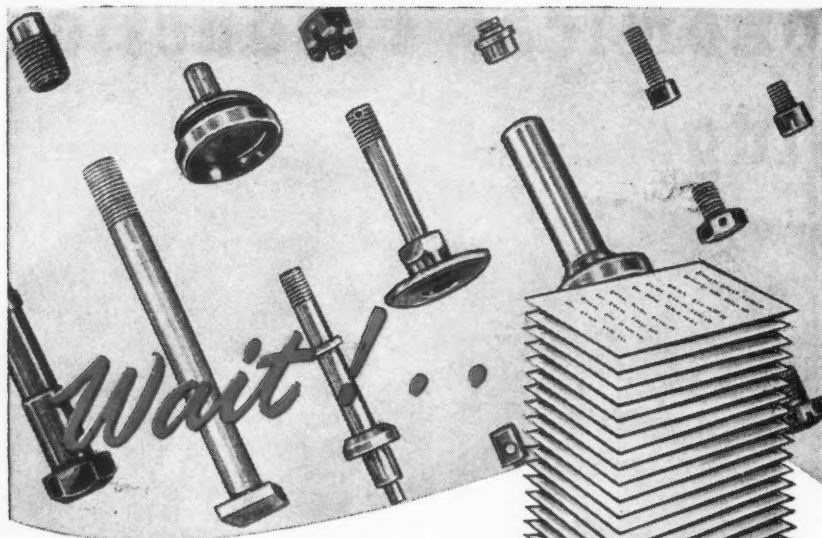
*Write for Bulletin No. 65-B*

# AJAX

**MANUFACTURING COMPANY**

EUCLID BRANCH P. O. CLEVELAND 17, OHIO  
621 MARQUETTE BUILDING • CHICAGO 3, ILLINOIS





## What's back of the lowest bid?

It's easier to ask — *and answer* — this question *before* putting out for bids. Because once the bids are in you may find your choice limited.

You know how difficult it is to write specifications that cover *every* possible contingency. For instance, it may turn out that you could use . . .

- 1 *Engineering Service* to work out functional design and material in terms of greater mass production . . .
- 2 *Production Facilities* to meet unforeseen requirements covering strength . . . accuracy . . . finish . . . while keeping delivery and cost in line with your needs.
- 3 *Manufacturing Stability* — the sound reputation of a supplier that justifies your choice of source for vital parts.



## facilities insure

your ultimate satisfaction with your precision parts. And the bid may not be out of line! This bulletin is published in Sweet's

File 4m10 for Product Designers. If you prefer that we send you a copy, please request it on your letterhead.

P-3

## THE CORBIN SCREW CORPORATION

The American Hardware Corporation, Successor

NEW BRITAIN

CONNECTICUT



See Sweet's Product Design Catalog, outline of Corbin Products and Facilities

# Precision Parts

## NEWS OF INDUSTRY

mediately after the war of 20 billion dollars, his statement indicated.

"In terms of jobs, both on the site of construction projects and elsewhere, this program should provide postwar jobs for 9,000,000 workers," Mr. Pirnie said.

The CED is distributing survey check sheets at once to its organization in the field. When returned these will show the dollar volume of proposed construction, the period of building, present status of plans, value of materials to be used and the number of on-site jobs indicated by these programs in the 2800 areas. In its survey the CED is being assisted by the action and advisory committee representing the American Society of Civil Engineers.

## End Use Order Clarified

Washington

• • • Clarification of M-126, which restricts the end use of iron and steel was made recently at WPB through the issuance of Direction 1. The order contains many cross-references to other WPB orders, directions or schedules, some of which have already been revoked and others may be revoked in the near future.

Such revocations, WPB pointed out, have the following effect with respect to M-126:

"If the other order is revoked, the use of steel in the manufacture of articles formerly covered by the exception and by the revoked order is not restricted by M-126. For example, List A of Order M-126 contains the item 'sign hanger frames, except as may be permitted under Order L-29.' Order L-29 has been revoked and therefore the provisions of M-126 do not apply to the use of iron or steel in the manufacture of sign hanger frames."

## Trolley Coaches Delivered

Philadelphia

• • • The first public transportation vehicles built by the ACF-Brill Motors Co. since 1942, seven trolley coaches, were recently delivered to the Des Moines Railway Co. During the past three years the firm has been engaged in the manufacture of aircraft, ordnance, and ship assemblies for the Army and Navy.

The next 25 trolley coaches moving off the assembly lines are scheduled for delivery to Honolulu.





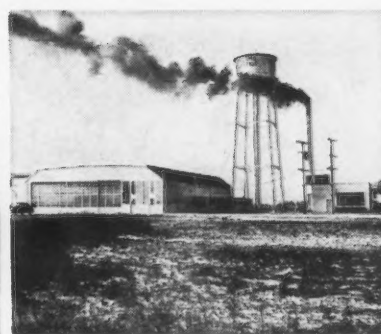
*The Standard Products Co., Port Clinton, Ohio Plant*



*Reid Products, Division of The Standard Products Co., Cleveland, Ohio*



*The Standard Products Co., Marine City, Mich. Plant*



*The Standard Products Co., Plastics Division, St. Clair, Mich.*



*One of the largest injector presses in the world. Plastics Division, St. Clair, Mich.*

## At your service

**T**HE STANDARD PRODUCTS COMPANY is an organization of engineers and technicians *dedicated* to the designing and manufacturing of Steechan glass-run window channel, mechanical rubber goods, metal stampings, thermo plastics, thermo setting plastics, armament, munitions and automobile hardware.

Through years of experience, this company has acquired a wealth of knowledge in the art of creative development and production. Standard Products reputation for *efficiency* in manufacturing did not just happen, but is the result of a slow, careful building process, developed by a corps of top-flight executives, engineers and loyal workers . . . definite personalities that are reflected in the products they produce.

★ ★ ★

*The Standard Products' engineering and planning divisions are at your service. Mail all inquiries to The Standard Products Company, 505 Boulevard Bldg., East Grand Blvd. at Woodward, Detroit 2, Mich.*

# THE STANDARD PRODUCTS COMPANY

*General Offices and Research Laboratory — 505 Boulevard Bldg., Detroit 2, Mich.*

# The Answer TO MANY OF YOUR RECONVERSION PROBLEMS . . .



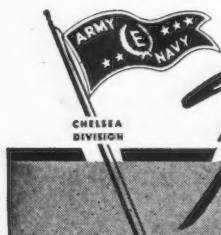
## Focus on FEDERAL SCREW!

In planning a rapid change-over to civilian manufacture, keep in mind the production capacity at Federal Screw Works. The contract manufacture of screw machine products and cold-forged parts has been our specialty since 1919—and the added plant facilities and technical skill resulting from our war work puts us in an unexcelled position to supply many of the parts you may soon be needing.

Federal Screw Works is fully equipped to make screw machine products of all types—to perform all second-operation work, including grinding, heat treating and plating—and to produce parts by cold forging and thread rolling—in any volume desired, and to your closest specifications.

Send us the details of the parts you need. Without obligation on your part, we'll be glad to quote prices and deliveries.

Free illustrated book, "Focus on FEDERAL SCREW", shows at a glance what we can do for you. Write for a copy—on your company letterhead, please.



# Federal

## SCREW WORKS

DETROIT AND CHELSEA, MICHIGAN  
MAIN OFFICES: 3401 Martin Ave., Detroit 10, Michigan

NEWS OF INDUSTRY

### Threat to Aircraft Industry Described By Eugene E. Wilson

Chicago

• • • Maintenance of America's technological leadership in aircraft production, recovering all or part of the cost of Army and Navy development through improved air commerce and industry, was advocated recently by E. E. Wilson, vice-chairman, United Aircraft Corp. and president, Aeronautical Chamber of Commerce of America.

American preparedness policy "requires an adequate private manufacturing establishment maintained through a planned development program which is calculated to promote technological leadership through engineering competition and to provide the capacity for emergency expansion" he declared.

As a starting point he advocated a coordinated program of replacement and production for the armed forces, designed to keep our equipment in the forefront. "We may accept as axiomatic that anything in production today is obsolete insofar as a postwar air force is concerned. Simultaneously we should plan a development of new foreign and domestic air transports. A long term continuous program of this kind must form the basis of conserving American airpower."

Unless positive steps are taken promptly the American aircraft manufacturing industry is threatened with extinction, he declared, pointing out that its percentage of profit during the war has been so low that its entire capital reserves amount to but a few days operating cost. Conversely, he pointed out, automobile companies under renegotiation and revenue codes were able to earn twice as great profit from the sale of aeronautical products as did the creators of these products—the basic aircraft industry.

### Waterbury Heads Detroit SAE

Detroit

• • • R. J. Waterbury of the Chevrolet Body Engineering Department, has been elected chairman of the Detroit Section of the Society of Automotive Engineers for 1945-46.

F. C. Young, Ford Motor Co. metallurgist, was named vice-chairman. Frank S. Spring, of Hudson Motor Car Co., was named secretary and F. W. Marschner, of New Departure Div. of General Motors, was elected treasurer.

# Could you Machine this Work in 5 Simple Steps?



Photo courtesy  
Parker Stamp Works, Inc.,  
Hartford, Connecticut

A Milwaukee 2D Rotary Head Milling Machine milled this Walkie-Talkie part mold in 5 simple steps in a total time of 90 hours — a typical speed, economy, and accuracy performance. Here is the sequence of operations:

- 1—Strap both mold halves together in an upright position on machine table and mill "Ear" and "Mouth" sections complete.
- 2—Mill elongated sections for core guide.
- 3—Position mold blocks on machine table as illustrated, lay out and mill handle grip section complete.
- 4—Mill core guide and recesses to form small pass at the "Mouth" end of molded part.
- 5—Mount core holding plate in vise and mill 3 recesses.

*Total machining time — 90 hours.*

Check these advantages of the Milwaukee 2D Rotary Head Milling Machine and how you can benefit from them in your own shop:

**DIRECT** . . . mills mold cavities in a single setup without the aid of templates or models, transmitting blueprint dimensions and outlines directly to the workpiece.

**ACCURATE** . . . chances for error are eliminated because there is no change in setup. Exact control of all combinations of cutting movements — possible only with this machine — transmits mathematical precision to the work.

**FAST** . . . initial job preparation and setup time is reduced to the minimum. Accurate performance of the machine saves operator's time and rapid production of intricate molds and dies is the result.

*Write for Bulletin No. 1002C and complete information.*



BUILDERS OF MILWAUKEE ROTARY HEAD MILLING  
MACHINE • MIDGETMILL • SPEEDMILL • FACE MILL  
GRINDER • AUTOMETRIC JIG BORER • CENTER SCOPE.

**Kearney & Trecker**

*Products*

**CORPORATION**

Milwaukee 14, Wisconsin

Subsidiary of Kearney & Trecker Corporation



# HOLTITE SPECIALS



These Special Fastenings and Parts were selected from thousands of items we are continually producing to convey an idea of the extensive range of our service.

If you are now using standard fastenings that are not fully satisfactory for the purpose, send us full particulars and we will gladly recommend Specials designed specifically for your particular application. Specially designed fastenings often eliminate extra parts and assembling operations while strengthening the assembly.

Special equipment, representing the latest improvements in high speed, precision machinery, together with experienced engineering talent assure the most precise, efficient Specials that can be produced. Send samples, specifications or blue prints for quotation.



**50% SAVINGS**  
**HOLTITE**  
— PHILLIPS —  
Recessed Head Fastenings



As bit cannot slip from recessed head, spiral and power drivers can be safely used, even on finished parts, to cut your fastening time in half!

For regular fastenings select your requirements from the complete line of HOLTITE standard screws, bolts, nuts and allied fastenings, furnished with slotted head or HOLTITE-Phillips Recessed Heads.

**CONTINENTAL**  
**SCREW CO.** NEW BEDFORD,  
MASS., U.S.A.

## NEWS OF INDUSTRY

### Baldwin Forms New Canadian Subsidiary Philadelphia

• • • Formation of a Canadian subsidiary of The Baldwin Locomotive Works to market in Canada such Baldwin products as turbines, water wheels, hydraulic presses, power tools and diesel engines from headquarters to be opened soon in Toronto, has been announced.

The wholly-owned subsidiary, known as Baldwin Locomotive Works of Canada, Ltd., will subcontract its orders to the United Steel Co., Ltd., which has four plants in eastern Canada and headquarters in Toronto.

All production will be under general supervision of Baldwin of Canada and will be from Baldwin designs and specifications.

Officers of the new company, elected at an organization meeting held in Toronto, are Ralph Kelly, president; W. Horace Holcomb, vice-president; W. N. Brownlie, managing director; H. D. Humphreys, secretary and treasurer; and T. E. McFalls, assistant secretary and assistant treasurer. All except Mr. Brownlie are officers of the parent company, and he will direct the activities of the subsidiary and will establish his headquarters in Toronto as soon as suitable quarters are selected.

### Republic Declares Dividend

Cleveland

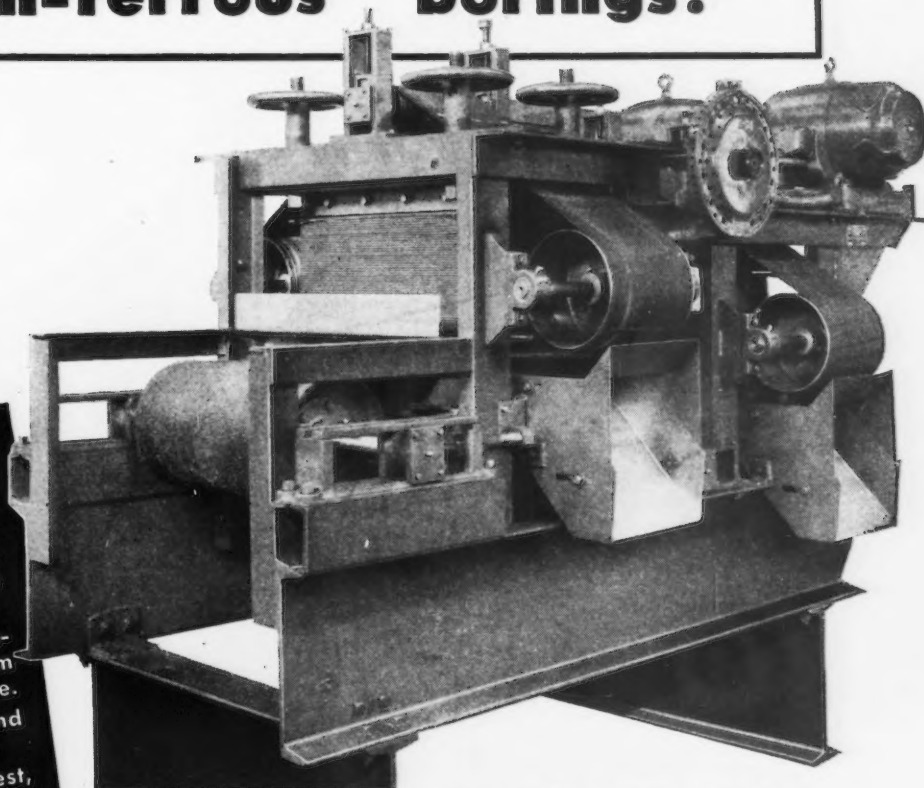
• • • Directors of Republic Steel Corp. have declared a dividend of \$1.50 per share on the 6 per cent cumulative convertible prior preference stock, Series A, payable July 2, 1945, to stockholders of record June 11, 1945. A dividend of 25c. per share on the common stock of the corporation, payable July 2, 1945, to stockholders of record June 11, was also declared. The board has called for redemption on June 30, 1945, of the 6 per cent cumulative convertible preferred stock at the redemption price of \$110 per share plus the accrued dividends of \$1.50 per share for the period from April 1, 1945, to June 30, 1945.

### Pittsburgh Steel Reports

Pittsburgh

• • • Net sales in the first quarter this year for Pittsburgh Steel Co. amounted to \$14,408,644. Net profit for that period amounted to \$192,718.

# Removes Finest Iron Fuzz... from non-ferrous borings!



## FEATURES:

Separates materials only 20% as magnetic as iron.  
Produces highest grade ingot — protects extrusion dies, cutting tools, etc.  
Two magnets in each separation zone to push from below belt and lift above.  
Reciprocating feeder and center "turn-over" step.  
Separates even smallest, oily fuzz.  
Anti-friction oil seal bearings.  
Powerful, automatic separation.

## Dings Dual Cross Belt Magnetic Separator

This High Intensity Dings Separator will take even the finest iron fuzz out of non-ferrous borings and successfully reclaim abrasives from grinding wheels. How? With four powerful magnetic zones that both lift from above and push from below—plus a center step-down that turns the material over, untangling and exposing any iron that passes the first two magnetic zones. Material is automatically removed by the cross belts.

For powerful, selective separation investigate the Dings Dual Cross Belt Separator. Send today for complete details.

**DINGS MAGNETIC SEPARATOR CO.**

516 Smith Street, Milwaukee 7, Wis.

# Dings

"high intensity"

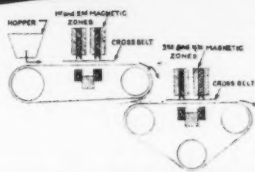
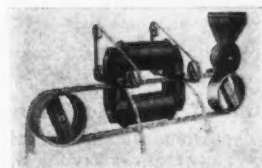


Diagram showing flow of material through first two magnetic zones where iron is separated by pushing and lifting; then by "step down" to zones three and four where any remaining iron is removed.



Dings cross belt separator showing principle of separation. Iron particles are attracted and held to the belt until they pass out of the magnetic zone where they are automatically discharged.

# SAVE SUPERVISION in fitting PRECISION PARTS



YOU PROBABLY KNOW Laminum shims as assembly time savers. But have you overlooked the fact that in fitting machine parts by peeling these precision laminations, considerably less supervision is required. You have the certainty of uniform accuracy . . . with no spoilage. Your request for data invited.

*Laminum shims are cut to your specifications. For maintenance work, however, shim materials are sold through industrial distributors.*

Laminated Shim Company, Incorporated  
76 Union Street      Glenbrook, Conn.

## LAMINUM

THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

9221

## NEWS OF INDUSTRY

### NonFerrous Society Elects New Officers

#### Detroit

• • • At the conclusion of the Non-Ferrous Founders' Society's annual meeting which was held here recently, Edwin W. Horlebein was elected president of the society for the ensuing administrative year. Mr. Horlebein, one of the founders of the organization, is president of the Gibson & Kirk Co., Baltimore, and also serves on the OPA Advisory Committee on Brass and Bronze Foundries.

Thomas S. Hemenway, head of Metal & Alloy Specialties Co., Inc., of Buffalo, was elected to the vice-presidency of the society.

Retiring President Roy M. Jacobs, Standard Brass Works, Milwaukee, remains on both the board and the executive committee.

In his annual report, Mr. Jacobs brought out the progress made by the society during the past administrative year. Membership increased over 40 per cent; several additions were made to the headquarters staff; 13 meetings were held during the year and the seven functioning committees contributed much to the good thinking of the industry.

The following five directors were elected for three-year terms, to fill expiring directorships in five of the areas: Fred Haack, Jr., Capital Brass & Aluminum Co., Chicago; F. S. Wellman, Wellman Bronze & Aluminum Co., Cleveland; O. W. Swangren, Dorchester Brass & Aluminum Foundry, Inc., Hyde Park, Mass.; F. A. Mainzer, Pacific Brass Foundry of San Francisco, San Francisco; and Charles Wegelin, Dixie Bronze Works, Birmingham, Ala.

### Dura-Products Divisions Sold

#### Canton, Ohio

• • • Sale of four of seven divisions of the Dura-Products Co. was announced recently by Carl C. Steiner, president and general manager of the 20-year-old firm.

One of the nation's largest makers of decalcomania, license plate emblem and metal signs, Dura-Products has been sold to the Howard Zinc Corp., of Fremont, Ohio, an advertising specialties company.

Mr. Steiner said the company decided to quit business because it was unable to get new war contracts or the materials for civilian production.



Officers

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production.



**Superior Steel**

CORPORATION  
CARMEL, PENNSYLVANIA

In mass transportation applications, SUPERIOR STAINLESS STRIP STEEL offers all the advantages inherent in stainless alloys, plus the fabricating benefits of easy-handling coils in any desired length . . . accurate dimensions . . . uniform compositions and temper—assured by specialized, precision strip manufacture. Ask us for data helpful to your design planning.

# Dependable Controls for our Fighting Machines



## Shakespeare\* FLEXIBLE CONTROLS made with **KEYSTONE** *Wire*

The Shakespeare Company, famous for fishing tackle, is devoting its manufacturing skill to producing control cables for planes, tanks and jeeps. These cables are the life-lines between the operator and motor.

Because of their vital importance, the cables must meet rigid Army-Navy specifications . . . reason enough why quality Keystone wire is used in their manufacture. Wherever exact uniformity of strength, gauge and analysis is required, Keystone wire delivers in full measure.

We are indeed proud that the Shakespeare Company chooses Keystone wire for their highly-regarded products.

\*Shakespeare Company, Kalamazoo, Michigan.

**KEYSTONE STEEL & WIRE CO.**  
PEORIA 7, ILLINOIS

### HOW SHAKESPEARE CONTROLS ARE MADE

- ① Wire is spiralled, forming a flexible channel or tube.
- ② Impregnable coating is applied to the tube.
- ③ Control wire itself is spiralled for flexibility.
- ④ Assembled, tubing forms flexible path for control wire.



### NEWS OF INDUSTRY

## Combine Supercharger, Engine, Turbine, For Future Powerplants

St. Louis

• • • Powerplant of tomorrow's heavy-duty motor vehicles may be a combined diesel engine, supercharger, and turbine, it was suggested before the Diesel-Fuels & Lubricants Meeting of SAE St. Louis Section in Hotel Chase here recently.

The engine-supercharger-turbine combination was proposed by R. W. McLaughlin and C. F. Harms, of Elliott Co., Jeannette, Pa., as an effective method of putting exhaust gas to work. They explained that application of the supercharger would increase the engine's power output approximately by 50 per cent, and that the turbine would perform useful work in driving the supercharger. They added that future possibilities include utilization of the diesel engine merely to function as combustion chamber for the turbine and to drive the supercharger, with the turbine itself becoming the source of power.

The meeting was one of a series of local war emergency conferences held by sections of the Society of Automotive Engineers to facilitate the dissemination of war-engineering information. Afternoon symposium on the economics of diesel engine operation brought to light several wartime problems looking for a postwar engineering solution, and established that merely replacing gasoline engines with diesels in commercial motor vehicles may be neither an easy nor direct route to operating efficiency and economy in peacetime.

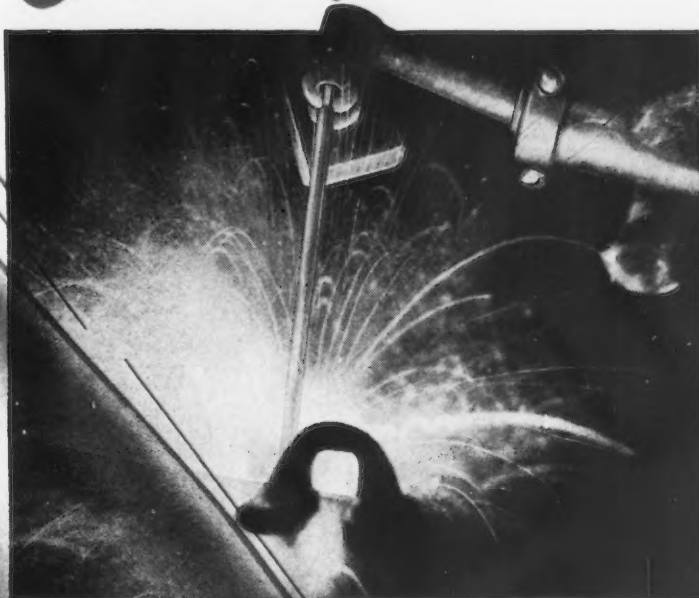
From F. Glen Shoemaker and H. M. Gadebusch, of Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich., came the report that automotive diesels promise to produce fuel savings of 25 to 30 per cent and to provide up to 25 per cent more reserve power for acceleration and hill climbing. However, W. M. Holaday and W. S. Mount, of Socony-Vacuum Oil Co., Inc., New York, N. Y., warned that postwar prices of diesel fuels and lubricants are likely to be higher.

## Sharon Steel Nets \$301,760

Sharon, Pa.

• • • Sharon Steel Corp. has reported a net profit of \$301,760 for the first of 1945. Gross sales for the company during that period amounted to \$8,935,223.

# THREE INCHES OF ELECTRODE CONTROL AN "Earthquake"



**S**MALL welding operations often carry big responsibilities. The lugs, for instance, by which big bombs are carried, are SMITHway welded to the bomb casing.

A potential earthquake is thus controlled by three inches of electrode... a minor welding operation compared with much of the work SMITHway Electrodes weld successfully; but a vital welding job, because IF that three-inch length of welding electrode isn't *right*—the consequences of failure would be terrible!

You, too, can rely on SMITHway Certified Welding Electrodes for welds that will not fail. In the A. O. Smith plants alone, more than 320,000 of these electrodes are being used every day on work that proves the value of welding as a modern production tool.

In your own plant, you can prove it, too. Make the most of welding... it is fast winning recognition as one of the best methods of fabricating most products of steel. Write for the SMITHway Welding Electrode catalog.

*Buy an Extra War Bond This Month!*

**Mild Steel... High Tensile... and Stainless Steel**

**WELDING ELECTRODES**

*made by welders... for welders*

SMITHway Welding Monitor  
trains better welders, faster.

SMITHway A. C. Welding Machine  
saves power; eliminates arc blow.

**SMITHway  
Certified  
WELDING  
ELECTRODES**



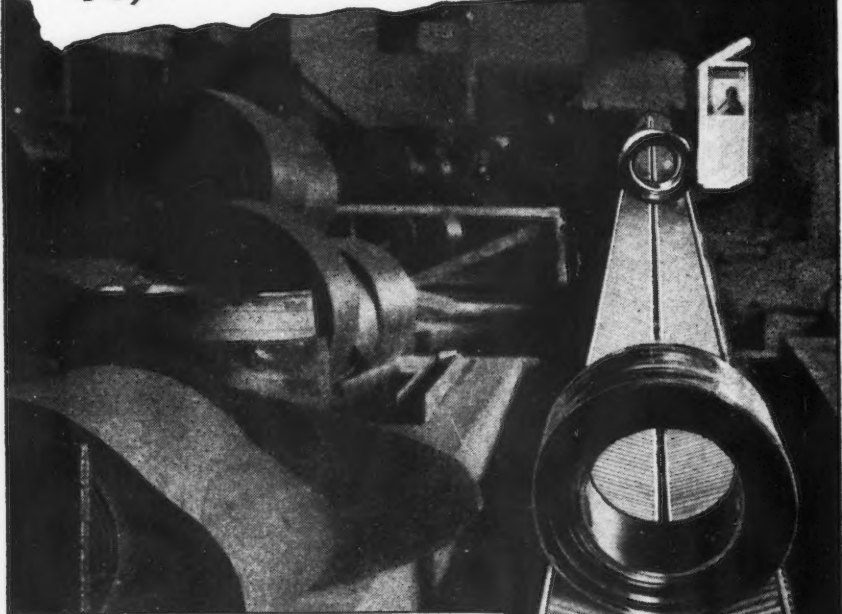
**A. O. SMITH Corporation**

NEW YORK 17 • PITTSBURGH 19 • CHICAGO 4 • TULSA 3  
HOUSTON 2 • DALLAS 1 • LOS ANGELES 14 • SEATTLE 1

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# How to Handle More 16,000 lb. Coils Per Hour!



FROM the coiling machine . . . on past the welders . . . onto the scale section . . . then down the long run of A-F heavy duty roller conveyors to accumulate on additional roller conveyors of the same type—from which they are later removed by an overhead crane—these 16,000 lb. coils are handled with efficiency and speed.

YOUR materials handling and products handling problems may be altogether different, but A-F Engineers backed by 44 years of "know how" can help you solve them.

Without obligation on your part, write for the latest catalog showing other types of Conveyor Systems engineered by Alvey-Ferguson or a frank discussion with an A-F Conveyor Engineer.



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P. O. Box 396, Vernon Branch, Los Angeles 11, Calif.

CONVEYING EQUIPMENT

# Alvey-Ferguson

METAL PRODUCTS CLEANING & FINISHING EQUIPMENT

## NEWS OF INDUSTRY

### Continental Can Co.'s Net Earnings Rise

#### New York

• • • Consolidated profits of Continental Can Co., Inc., and subsidiaries for the twelve months ended March 31, 1945, before depreciation, taxes and appropriation for inventory price decline or other contingencies, were \$22,901,961, compared with \$14,534,738 earned before depreciation and taxes in the twelve months ended March 31, 1944.

Net earnings were \$6,961,741, which, after an interim dividend of \$18,750 on the recently issued \$3.75 cumulative preferred shares, left \$6,942,991 applicable to the common stock, equivalent to \$2.43 per share on 2,853,971 outstanding common.

These earnings, compared with net earnings for the corresponding twelve months' period ended March 31, 1944, of \$5,519,873, equivalent to \$1.93 a common share.

They also compare with net earnings for the twelve months ended Dec. 31, 1944, of \$6,044,985, equivalent to \$2.12 a common share.

### New Officers Elected For Allis-Chalmers

#### Milwaukee

• • • After declaring a 40c. a share dividend on common and \$1 on preferred stock, the stockholders of the Allis-Chalmers Mfg. Co. re-elected Walter Geist president and other officers re-elected are:

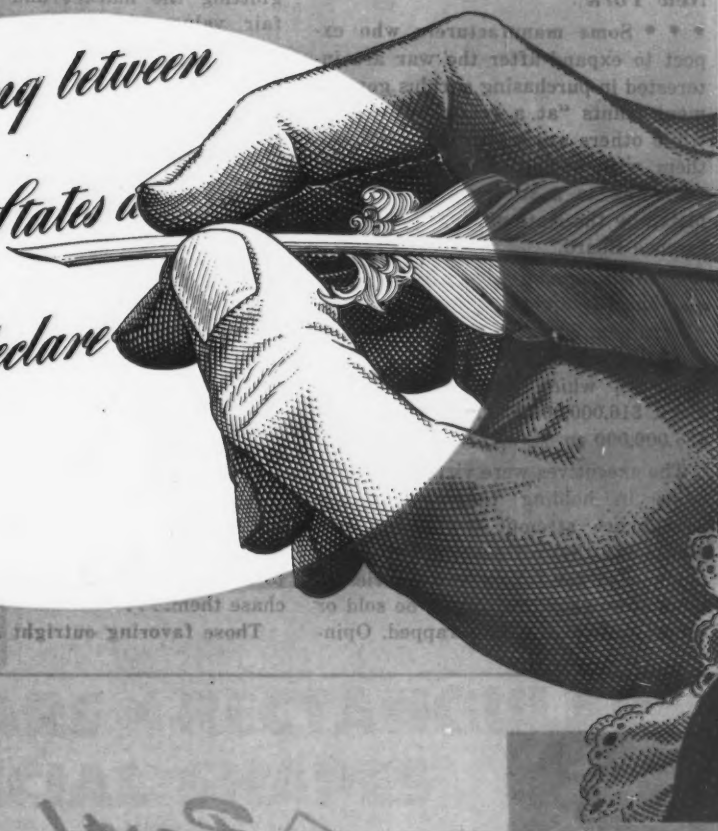
Edwin H. Brown, vice-president in charge of development engineering; Walter E. Hawkinson, secretary and treasurer; Lee H. Hill, vice-president in charge of the general machinery division; J. A. Keogh, vice-president and comptroller; William A. Roberts, vice-president in charge of the tractor division; Harold W. Story, vice-president and general attorney; James M. White, vice-president in charge of manufacturing, and William C. Johnson, vice-president in charge of general machinery division.

### Youngstown Sheet's Net Rises

#### Youngstown, Ohio

• • • In the first quarter of this year, Youngstown Sheet & Tube Co. made a net profit of \$1,959,412. This compares with \$1,636,369 in the same period of last year. Net sales in the first quarter of this year amounted to \$9,782,758.

*We owe it, therefore, to  
candor, and the amiable  
relations existing between  
the United States and  
powers to declare*



*In 1823 when the Monroe Doctrine was written*

**Freedom Forge, then 28 years old, was producing 15 tons of blooms per week**

When President Monroe scratched his signature on the doctrine that bears his name, America's industrial age was young. The first American steamboat had crossed the Atlantic only 4 years before; the opening of the Erie Canal was 2 years in the future; the safety lamp, the stethoscope, and the kaleidoscope were recent inventions. Yet Freedom Forge had already served America for almost three decades, and expanded

and improved its plant by installing a stack 20-feet high and a bosh 7-feet in diameter. These developments stepped up the output to 12 to 15 tons of blooms and bar iron a week!

Both the changes and the results seem small in the light of today—but they symbolize a progressive spirit that has continuously ruled the organization. The Standard Steel Works, a direct descendant of Freedom Forge and

still doing business at the original location, has pioneered methods and processes that make "Standardize on Standard" a dependable guide to the best in forgings and castings. The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Pennsylvania, U. S. A. Offices: Philadelphia, New York, Chicago, Washington, Boston, Cleveland, St. Louis, San Francisco, Houston, Pittsburgh, Detroit.



**BALDWIN**



**STEEL FORGINGS & CASTINGS**



## Leasing or Purchase Of Government Plants Suggested by Survey

### New York

• • • Some manufacturers who expect to expand after the war are interested in purchasing surplus government plants "at a reasonable price," while others are interested in leasing them with option to purchase later, according to a survey recently completed by the National Industrial Conference Board.

Opinion among the executives is also sharply divided on the policy the government ought to pursue in disposing of its wartime industrial plant and facilities, which to date have cost about \$16,000,000,000 and occupy over 426,000,000 sq. ft. of factory space.

The executives were virtually unanimous in holding that government should not attempt to operate any plants and that all government plants not needed for future emergencies in a stand-by condition should be sold or leased to industry, or scrapped. Opin-

ions differed sharply, however, on the manner and tempo of disposal.

One manufacturer, whose view represents that of a number of respondents, believes that in order to avoid glutting the market and destroying fair values the government should undertake the orderly liquidation of unneeded plants and machinery over a period of years, and that the liquidation prices "should be kept sufficiently high to permit private owners of surplus plants and machinery to dispose of their surplus at a reasonable price."

Diametrically opposite is the opinion of another group, expressed by a manufacturer of industrial machinery: "The general policy concerning government-owned plants should be to sell them at reasonable prices as soon as possible, perhaps within a year after they become surplus. Those which cannot be sold at reasonable prices should be scrapped. . . . A liberal view of reasonable values should be maintained by government to encourage private industry to purchase them. . . ."

Those favoring outright and imme-

diately sale of surplus government plants point out that the immediate postwar market, with its heavy backlog of accumulated demand, may be the most favorable time to attempt the determination of the "use value" of surplus plant and equipment. A few manufacturers are also fearful that if the surplus plants are not sold, a concerted demand might eventually arise for government operation of the plants retained.

Many executives who would like to purchase the plants for postwar expansion stress that the price of the property would have to be reasonable, because in many cases extensive alterations would be necessary to bring a government plant into efficient operation for the manufacture of peacetime products. In a study prepared for the Smaller War Plants Corp. late in 1944, it was stated:

"There is a feeling in industry that the prices set up in the operators' purchase option provisions for the purchase of government-owned plants are excessive. . . . Whether or not the prices are high, the fact that they are based on the cost of wartime construction is evidence that they bear no relation to the actual long-term value of the plants for peacetime industrial purposes. . . ."

"Any determination of value for sale to industry must be made on the basis of actual use value if the sales are to result in a permanent benefit to the community as a whole. . . . Prices should be established solely upon the basis of the amount of usable floor space and the return that can be had from it."

A considerable number of the manufacturers believe that long-term leases are preferable under present conditions to outright purchase. One parts manufacturer says:

"It is highly advisable for the government to make some arrangement whereby both machinery and plant buildings can be leased from the government on a reasonable rental basis. Making fixed capital investments under present high prices of war plants and machinery is definitely wrong."

Several executives emphasized the difficulty at present "of doing business with the government" in the matter of surplus plants, and one declares that restrictions are so numerous that "it would be easier to build a new building." Hopes were expressed that present government regulations, restrictions, and procedures would be relaxed to facilitate the acquisition of surplus plant and equipment by private business.



**Best!**  
**FOR LIGHT DUTY**  
**Speed!**

**High Speed at Low Cost**  
**No. 48**

For tool room, stock room, or maintenance shop, this 6' x 6' capacity hack saw is superior to anything in its price class. Embodies similar design principles and features of M.A.R. Cycle Heavy Duty production saws. Cuts a 2" standard pipe in 30 seconds—a 3" round in 8 minutes!

**MARVELSAWS**

**2-Speed and 4-Speed**  
For applications where materials of different hardnesses are to be cut, MARVEL 48 is available in 2-Speed and 4-Speed models. Built-in work tracks for holding other end of bars are also available for all models.

### Complete Range of Metal Sawing Machines

Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price, and recommendation for the saw to fit your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course.)

**ARMSTRONG-BLUM MFG. CO.**

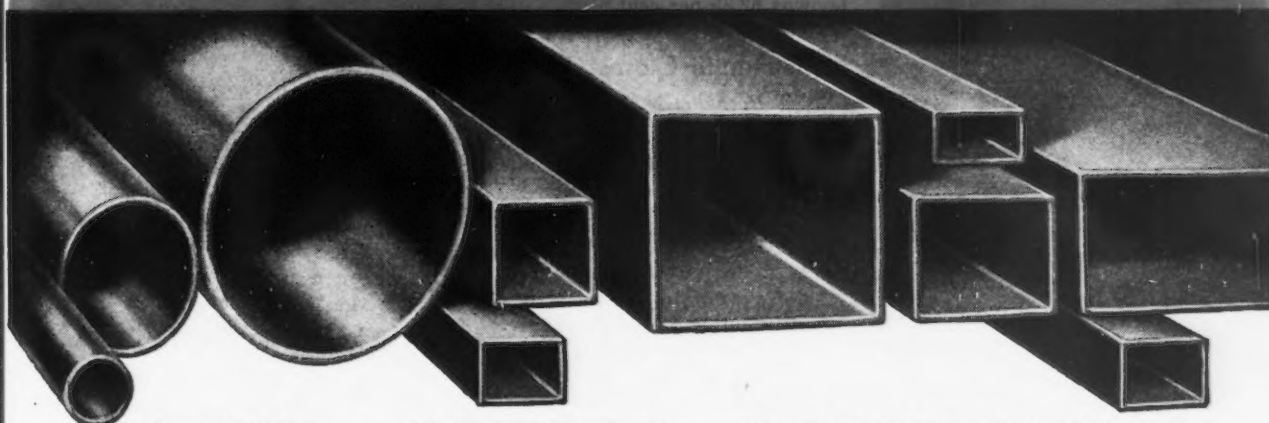
5700 W. Bloomingdale Ave., Chicago 39, Illinois, U.S.A.





# *Michigan* **WELDED STEEL TUBING**

*The Modern Electric Resistance Welded Steel Tube*



**ROUND ★ SQUARE ★ RECTANGULAR  
and SPECIAL SHAPES**

**SIZES: 1/4" to 4" O. D. GAUGES: 9 to 22**

The manufacturing method employed in the production of Michigan welded steel tube results in a uniformly smooth, scale-free surface.

Offered in commercial mill lengths or cut to specified lengths, shaped and fabricated ready for assembly.

*Engineering advice and technical help in the selection  
of tubing best suited to meet your needs.*

*Michigan* **STEEL TUBE  
PRODUCTS COMPANY**

*More Than 25 Years in the Business*

**9450 BUFFALO ST. • DETROIT 12, MICH.**

**Factories: Detroit, Michigan and Shelby, Ohio**

**DISTRIBUTORS:** Steel Sales Corp., Detroit, Chicago, St. Louis, Milwaukee and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland, Dayton, Ohio—Dirks & Company, Portland, Oregon—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—American Tubular & Steel Products Co., Pittsburgh, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—C. A. Russell Inc., Houston, Texas—Drummond, McCall & Co., Ltd., Toronto, Canada.

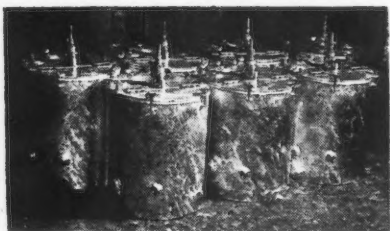
## Welded Galvanized Products Practical

By GEORGE H. OHMER  
Chief Engineer

### Dayton

• • • All welded construction of products fabricated from galvanized sheet, plate and pipe has been made practical by the patented Galv-Weld Process.

The weld and adjacent damaged area is now coated at the time of electric arc welding, making use of the residual heat to flow on Galv-Weld Alloy, which insures 100% protection against rust and corrosion at the point of weld.



INLET AND OUTLET PORTS on these paint spray tanks for U. S. Signal Corps, were welded on after hot dip galvanizing.

The process obsoletes much riveted and bolted construction and the use of victory solder which withstands very little abuse; lowers manufacturing costs; and makes for stronger, leak-proof and vibrationless construction. Regalvanizing with Galv-Weld Alloy is fast and permanent; once applied, the coating will not chip, peel or crack even when the base metal is stressed beyond its elastic limit. Galv-Weld Alloy has a better bond than zinc sprayed coating and resists corrosion longer. Fractures in galvanized coating, due to forming, are easily regalvanized with Galv-Weld.

The Galv-Weld Process produces no fumes, and requires no sand or grit blasting, no flux in application, nor any special or expensive equipment. The alloy, which comes in bar form, may be applied in all positions, and in confined quarters.

Railroads are employing the Galv-Weld Process in the construction and repair of water tanks, signaling systems and towers, steel work buildings and piping. Not affected by the corrosive and acid bearing fumes in refinery areas, Galv-Weld Alloy is used in the maintenance of refinery equipment; and all-welded galvanized steel buildings for farm and industry have been made feasible. The process is a "must" for underground storage tanks where protection against corrosion is paramount. Electric power companies are redesigning transmission towers to utilize welded rather than the conventional bolted type of construction, obtaining greater strength, ease of erection and lower cost.

Manufacturers are invited to submit samples of products for producing examples of how they can be Galv-Welded. There is no charge for this laboratory service. Details may be secured from Galv-Weld Products, Dayton 10, Ohio.

## Baldwin Locomotive Reports Net Income Philadelphia

• • • The Baldwin Locomotive Works reports that the consolidated sales of the company and its wholly owned subsidiaries for the twelve months ended March 31, 1945, were \$216,410,241 before renegotiation of war contracts; and that net profit amounted to \$4,972,564.

Included are dividends of \$739,300 received from the Midvale Co., of whose capital stock Baldwin now owns 62.35 per cent.

## Meehanite Closes Contract

New Rochelle, N. Y.

• • • The Meehanite Metal Corp. here, has concluded a contract in Australia with Kelvinator Australia Ltd., Adelaide, South Australia. The company is a subsidiary of Nash-Kelvinator Corp., Detroit, and is manufacturing similar machinery and refrigerators.

## Austin Forms Aviation Group

Cleveland

• • • In anticipation of far-reaching air line and airport development work in the immediate future, George A. Bryant, president of the Austin Co., announced the establishment of a new Austin Aviation Division with headquarters here, recently. The new division will be headed by W. R. Engstrom, Austin Co. vice-president, who has been district manager in the Pacific Northwest since 1933.

## Reports Drop in Net Income

Coatesville, Pa.

• • • Luken Steel Co. and subsidiaries report for the 1944 fiscal year net sales of \$54,743,937 or 4.6 per cent more than net sales were in 1943.

The company's net income for that period amounted to \$682,957 contrasted with \$1,317,281 in the previous fiscal year. This was at the rate of \$2.15 a share on common in 1944, compared with \$4.14 for 1943 fiscal year.

The lower net income, according to the company, was due to the reduction in demand for alloy and specialty steels, an increase in wage costs, and the necessary purchase of slabs for rerolling into plate.

Last year the company took title to real estate in Coatesville which had been owned by Bethlehem Steel Co.

This property it was said will be used to furnish additional property for the company's open hearth raw materials inventories and other storage facilities.

## European War Costs To Continue, Says Economist

Chicago

• • • Defeat of Germany does not mean that the costs of the war in Europe have ended, Simeon E. Leland, chairman of the board of the Federal Reserve Bank of Chicago and chairman of the Department of Economics of the University of Chicago, told the Chicago Association of Commerce recently.

In World War I, he pointed out, the public debt continued to mount for nine months following the cessation of hostilities. He foresaw little likelihood that the national debt will be substantially reduced during the next generation, declaring that debt management rather than debt reduction is the important problem before the treasury in the coming years.

"To pay off a debt of \$300,000,000 in 30 years would require an annual charge of about \$13,395,000,000, the effective interest rate being 2 per cent. The annual cost of carrying a \$300,000,000 debt will require approximately \$6,000,000,000 for interest. When the choice is between taxes aggregating \$13,400,000,000 for debt retirement and \$6,000,000,000 for carrying the debt as it is, most people can be expected to prefer the lower tax bill, especially since postwar business revival has been largely predicated upon a reduction of taxation in order to increase the sums available for expenditure on consumer's goods and services."

## Keystone Wire's Net Up

Peoria, Ill.

• • • Keystone Steel & Wire Co. reports for the three months ended March 31, 1945, the third quarter of the company's fiscal year, net profit of \$336,492 after all charges including federal income and excess profits taxes. This was equivalent to 44c. a share on 757,632 shares of capital stock outstanding and compares with net of \$269,600 for the same period a year ago, which was equivalent to 35c. a share.

For the nine months ended March 31, net profit was \$1,123,946 or \$1.48 a share, compared with \$996,320 and \$1.31 a share for the same nine months of last year.

FOR SAFE FOOTING  
USE

**JAL-TREAD**



## FOR ALL FLOOR-PLATE APPLICATIONS

You follow in the footsteps of Uncle Sam when you specify this new and improved rolled-steel floor-plate, for the Army, Navy and Maritime Commission have used it widely. Where the safety factor of sure, non-slip footing is needed to support heavy industrial traffic, maritime loads, or the moving public, it is the ideal installation.



Designed to offer maximum friction surfaces at point of contact, **JAL-TREAD** and **Junior JAL-TREAD** checker floor plates are easy to cut, weld, bend and install . . . present a pleasing appearance . . . are easy to keep clean. Available in wide range of sizes and weights.

*For delivery information, consult your local J&L office or favorite warehouse. Illustrated booklet gladly sent on request.*

**JONES & LAUGHLIN STEEL CORPORATION**

PITTSBURGH 30, PENNSYLVANIA

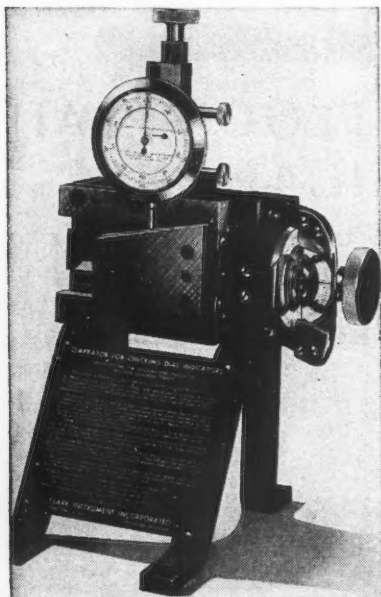
**CONTROLLED QUALITY STEEL FOR WAR AND PEACE**

**J&L  
STEEL**



# Clarkator

## CHECKS DIAL INDICATORS



**M**ICROMETER speed with sine bar precision—the fastest, most accurate method ever developed for checking dial indicators! Clarkator gives 100% inspection on every vital point. Checks comparators, hardness testers and all other instruments requiring precision dial indicating.

The Clarkator is sturdily built for long trouble-free service. Easy to operate—just four simple steps! Complete operating instructions are permanently attached to base.

Be sure of absolute accuracy of indicator readings. Put Clarkator to work for you. Regular use will provide a saving in test results alone worth many times its low cost! Illustrated 2-color circular contains complete descriptions and specifications of the Clarkator. Write for your free copy today! Dept. 1A.



**CLARK**  
TOMORROW'S ACCURACY TODAY  
**CLARK**  
**HARDNESS TESTER**  
**INSTRUMENT, INC.**  
10200 Ford Rd., Dearborn, Mich.

## FEATURE CONTINUATION

### Testing Wire Wrapped Steel Pipe

(CONTINUED FROM PAGE 61)

probably be considerably higher than standard pipe of similar strength.

(4) As built and tested, the pipe shows a great tendency to spring leaks at relatively low pressures, and these leaks are difficult, if not almost impossible, to locate and repair.

(5) Considerable practical difficulty was encountered in welding this pipe electrically, because under normal welding procedure the ground connection would be made through the wire and were one wire slightly thicker than the rest there would be a heavy concentration of

current at this wire which would on occasion burn off.

From the above conclusions, it would appear that this pipe, although technically satisfactory as a saver of material, would not appear practical if used in pipe lines with present methods of handling and welding pipes. In order to use it, new techniques must be worked out for welding of pipes and probably a different technique should be used in winding the pipe with the wire, so that additional tension would be placed on the wire and the inner tube could be placed in compression. If these techniques were developed this pipe might be practical for long pipe lines.

TABLE III

Hydrostatic Tests of Wire Wound Steel Pipe, Section No. 9, Unrestrained Ends  
10.67 Wires per In. Approximate Pitch, 0.093 In.

Pressure Lb. per Sq. In.	Volume Increase, Per Cent	Circumference Increase, Per Cent	Remarks
103			
202	0.011	0.022	
300	0.044	0.035	
399	0.098	0.039	
502	0.123	0.062	
620	0.127	0.062	
710	0.175	0.075	
810	0.206		
920	0.244		
1020	0.323		
1380	1.355		
1410		0.023	
1440			Permanent set. Head blown off. Fracture in tube metal about 1/8 in. from butt weld to collar.

Note: Average thickness of plate at break 0.095 in.

Initial Volume of Pipe 33,300 cu. in.  
Initial Circumference 76.2 in.

### Producing Frangible Plastic Bullets

(CONTINUED FROM PAGE 52)

in meeting the rigid dimensional specifications and increased very markedly the utility and life of the molds. Many thousand moldings have been produced in these molds, all of which have been hard chromium plated, and the original appearance and dimensions of the cavities and other mold parts have been accurately maintained.

The successful application of hard chromium plating to the bullet shaped cavity was a particularly difficult and

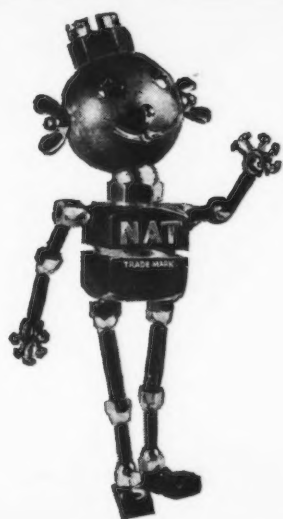
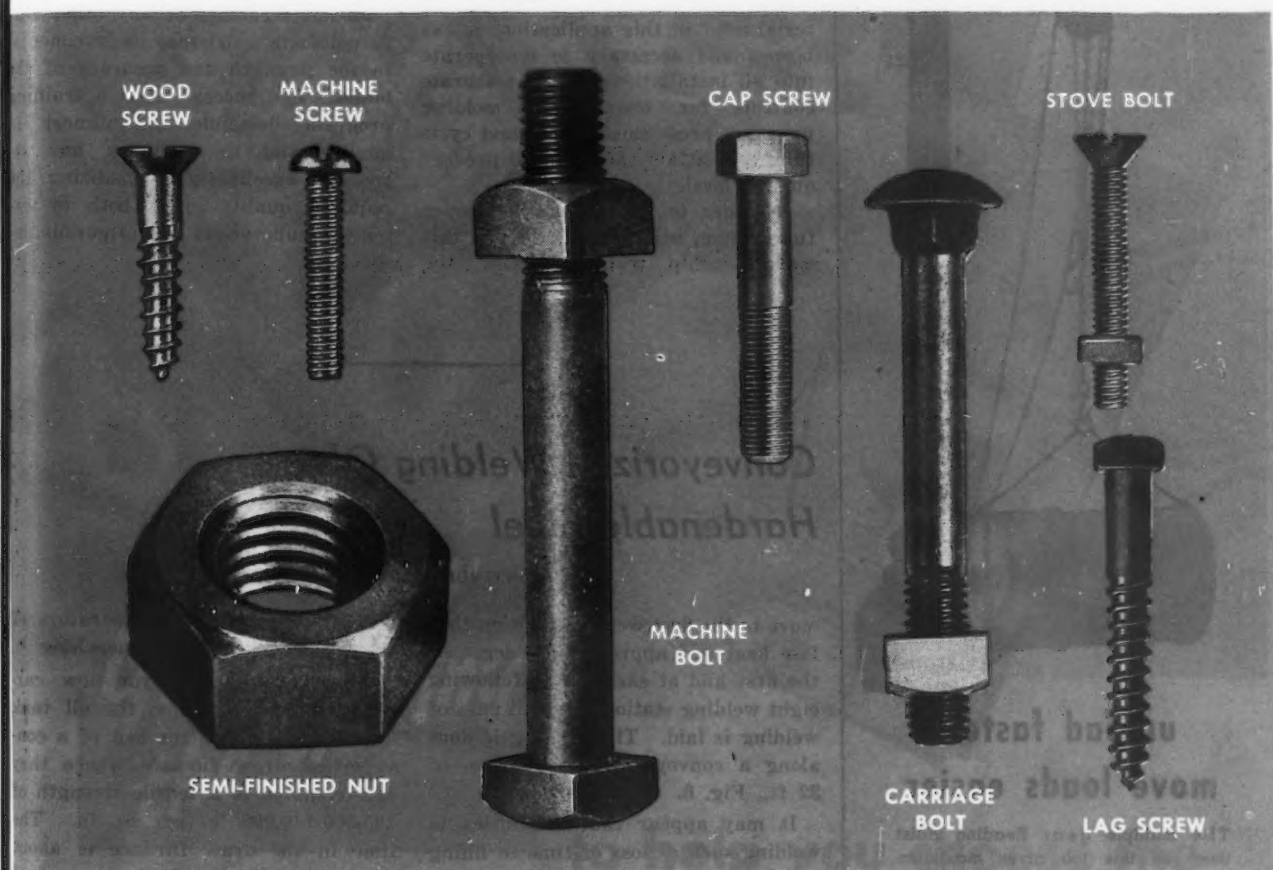
trying problem since it involved the deposition of a uniform thickness of hard chromium all over the surface of a pointed, dead-end hole.

However, by proper preparation of the cavity surface, selection and location of the conforming anode, and careful control of the many other essential factors, a plating technique was finally evolved which successfully solved the problem.

The molding press equipment used in the manufacture of the molded

# ALL EIGHT OF THE LEADING STAPLE FASTENERS MADE BY ONE DEPENDABLE MANUFACTURER

Part of the Complete *National Screw*  
Quality Line Assuring You Satisfactory Performance.



Here's a picture of what builds customer satisfaction and good will—a picture of eight top quality staple fasteners made by *National*.

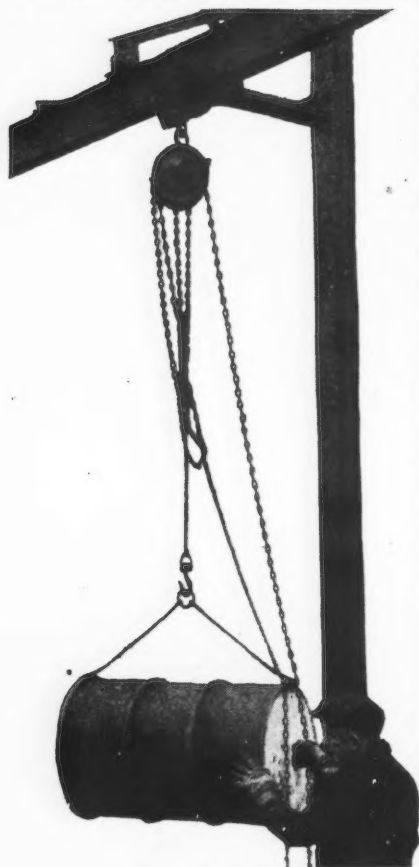
*National Screws* are characterized by clean, well centered slots of proper depth, and well formed threads and points. Bolts have well shaped heads, smooth shanks, cleanly defined squares, with nuts that fit properly. Nuts have clean-cut, sharp corners, smooth surfaces, smooth and uniform threads.

To excellent workmanship, *National* adds its famous *Laboratory-controlled Heat-treatment* which assures the tensile strength and durability of the finished fastener.

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HEADED AND THREADED  
PRODUCTS

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.

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move loads easier**

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OVERHEAD TRAVELING CRANES**

**READING  
HOISTS**

## FEATURE CONTINUATION

plastic bullet throughout the industry is quite varied. The main requirements of the press equipment used in this program is that it be in best of mechanical condition in order to assure proper functioning of the molds. Also, due to the rather sensitive nature of the particular molding material used in this application, it has been found necessary to incorporate into all installations rather elaborate controls for temperature molding pressure, press closing rate and cycle timing to attain the required product quality level.

In order to guarantee the proper functioning, utility and safety of this marksmanship training device, the

highest quality standards have been imposed upon the molded bullet. This has necessitated extremely careful inspection procedures involving complete dimensional gaging and extensive visual inspection for the detection of such defects as voids, seams, porosity, scratches or any other surface defects which may be detrimental to the strength and accuracy of the bullet. The success of this training program demands the utmost in quality and the industry has responded excellently in realizing the required quality levels both by extensive supervision and rigorous inspection.

## Conveyorized Welding Of Hardenable Steel

(CONTINUED FROM PAGE 55)

move to the first welding position they lose heat and approach 500 deg. At the first and at each of the following eight welding stations a small pass of welding is laid. The welding is done along a conveyor for a distance of 32 ft., Fig. 6.

It may appear that difficulties in welding such as loss of time in filling in craters, etc., would occur. However, this is not the case. Conveyor welding is governed only by the ability of each individual welder to correlate electrode burn-off rate with the rate of travel of the conveyor. Otherwise the problem becomes the same as that of welding any long single pass fillet, that is, depositing one electrode, stopping, changing the electrode, and continuing the weld. In conveyor welding the only change occurring is that a welder will make several short deposits with the same electrode.

From the welding conveyors, after passing a photoelectric counter, the welded grouser falls on another conveyor at right angles and is carried to the loading end of the quenching furnace. This furnace is also of the conveyor type but moves a controlled distance in a set interval of time, stops, and then moves again. This

permits of a uniform temperature of the grouser before oil quenching it.

A wire mesh conveyor now carries the grousers from the oil tank and drops them on the belt of a conveyorized draw furnace where they are tempered to a tensile strength of 125,000-140,000 lb. per sq. in. The time in the draw furnace is about 60-80 min. At the discharge end of the furnace the grousers are picked up by another conveyor belt and moved about 12 ft. to a rotary shot blast to descale and clean them for inspection, which follows immediately, and for the subsequent painting.

After an inspection for flatness and condition of the weld, the parts are hung on hooks and carried by belt into and out of a trough of zinc chromate primer. They continue moving in a circular manner and pass through a drying chamber which is heated by hot air taken from the tempering furnace. Packing boxes are placed at the end of the drying chamber and as the now completed grousers emerge they are placed in the boxes which are moved, when full, to the shipping platform. Rolled strip in the morning, finished part in the afternoon—this is truly streamlined production.



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# MACHINE TOOLS

... News and Market Activities

## Russian Orders May Be Clarified Soon

### New York

• • • While cancellations of machine tool orders on the Fourth Russian Protocol may occur and shipments may be held up temporarily on machines completed and awaiting shipment, these latter tools will be accepted and paid for by the Treasury Department under lend-lease, according to James A. Wright, former assistant director, tools division, WPB, and assistant sales manager, Van Norman Co. Speaking before a regional meeting of the National Machine Tool Builders Association held in New York last week (see also p. 154 of the May 17 issue of THE IRON AGE), Mr. Wright told the group that they could forget about recent Russian inquiries under lend-lease until the State Department clarifies the status of lend-lease to the U.S.S.R.

Russian orders carry a rating of AA 2, but if completion of such orders interferes with shipment of unrated domestic orders for reconversion, the machine tool builder may apply to the WPB for a special rating to expedite shipment, the speaker said.

French orders are unrated and amount to \$48,000,000 for the balance of the year. The requirements of Belgium, The Netherlands, Czechoslovakia and South America are unknown but are expected to be substantial. India will be the largest purchaser of machine tools of the United Kingdom group. Meanwhile, in this country there are still quite a few tools required by the Army, Navy and the Air Forces that will help maintain backlogs.

Mr. Wright revealed that a number of changes tending toward simplification could be expected within the next fortnight in WPB Order E-1-b. The revision will give a better position to unrated orders and will probably extend the "freeze period" from 60 to 90 days. Most "L" orders are slated for cancellation, Wright said.

Discussing postwar markets, E. Payson Blanchard, sales manager, Bullard Co., pointed out that export markets for machine tools promise good business, but that thoroughly new designs of machines will be demanded by foreign customers, rather

than surplus equipment. England, Switzerland, Sweden and other countries will compete for new industrial markets, such as South America, China and India, and means should be provided to put the U. S. industry on a competitive basis with other nations selling in these markets, Mr. Blanchard remarked. The restrictions of the sterling bloc are liable to be a serious handicap in certain Empire areas, but our banking institutions should be permitted to render the same financial services to our exporters as is rendered to the export traders of European nations, thus permitting them to quote equivalent terms, he urged.

Customer industries who have a strong interest in export will have little patience with present machine tool models and present manufacturing methods if they are to meet tight

competition at home or abroad. Hence, Mr. Blanchard saw a market only for the best items in surplus equipment and believed these would be used only until new models were available. According to his estimate, the market for new designs is a large one in this country, but the margin of improvement must be appreciable not only to justify the investment but also to attain an extra margin of economy in production to offset the increases in other factors, such as wages.

As soon as possible, each machine tool builder should measure his own part of the surplus and know what of his own tools or competitive tools are threatening his future market. Through his sales engineers he should obtain the earliest possible estimate of old and new markets and the competition that may appear in the form of new models, Mr. Blanchard said.

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## Main Cancellation Surge Yet to Come

### Cleveland

• • • Cancellations, on machine tools, which have so far failed to arrive in the expected surge, have run about 15 per cent here and are not bothering most of the major producers in the area to any particular extent. Some cancellations, of course, are coming through but at least one company is on the record for being glad to have them, since they have plenty of places to put them on postwar orders and would much rather keep the machines in their hands than contribute any further to the government surplus ultimately.

One dealer here stated that two weeks ago \$37,000 in cancellations rolled in and then ceased as abruptly as they started. All these cancellations, of course, suggest a planned cutback program with an eye to preventing reconversion jitters. One of the questions at hand is what has become of the shells for which there is no apparent further need in Europe. The Navy is reported to have a large quantity of heavy caliber stuff on hand at the time when the order trend

seemingly indicates that in the Pacific we are passing out of the bomb stage and into rockets.

With the new machinery dealers the situation is reported as excellent and the kind of business some of them are getting right now is definitely a source of pleasure. Jet propulsion has been the source of a lot of good business following closely the rocket urgency which was before them during February and March.

## Bell to Close Temporarily

### Buffalo

• • • Bell Aircraft Corp. plants at Buffalo and Niagara Falls will suspend production from July 1 to 8 inclusive, to take inventories in connection with a shift from a cost-plus-fixed-fee to a fixed price basis of operations, according to Vice-President Ray P. Whitman in charge of the Niagara Frontier Division.

The change in the price basis is being made by mutual agreement between the Army air Forces and the Bell company, Mr. Whitman said.

Experimental and flight research operations will not be interrupted during the eight-day shutdown.

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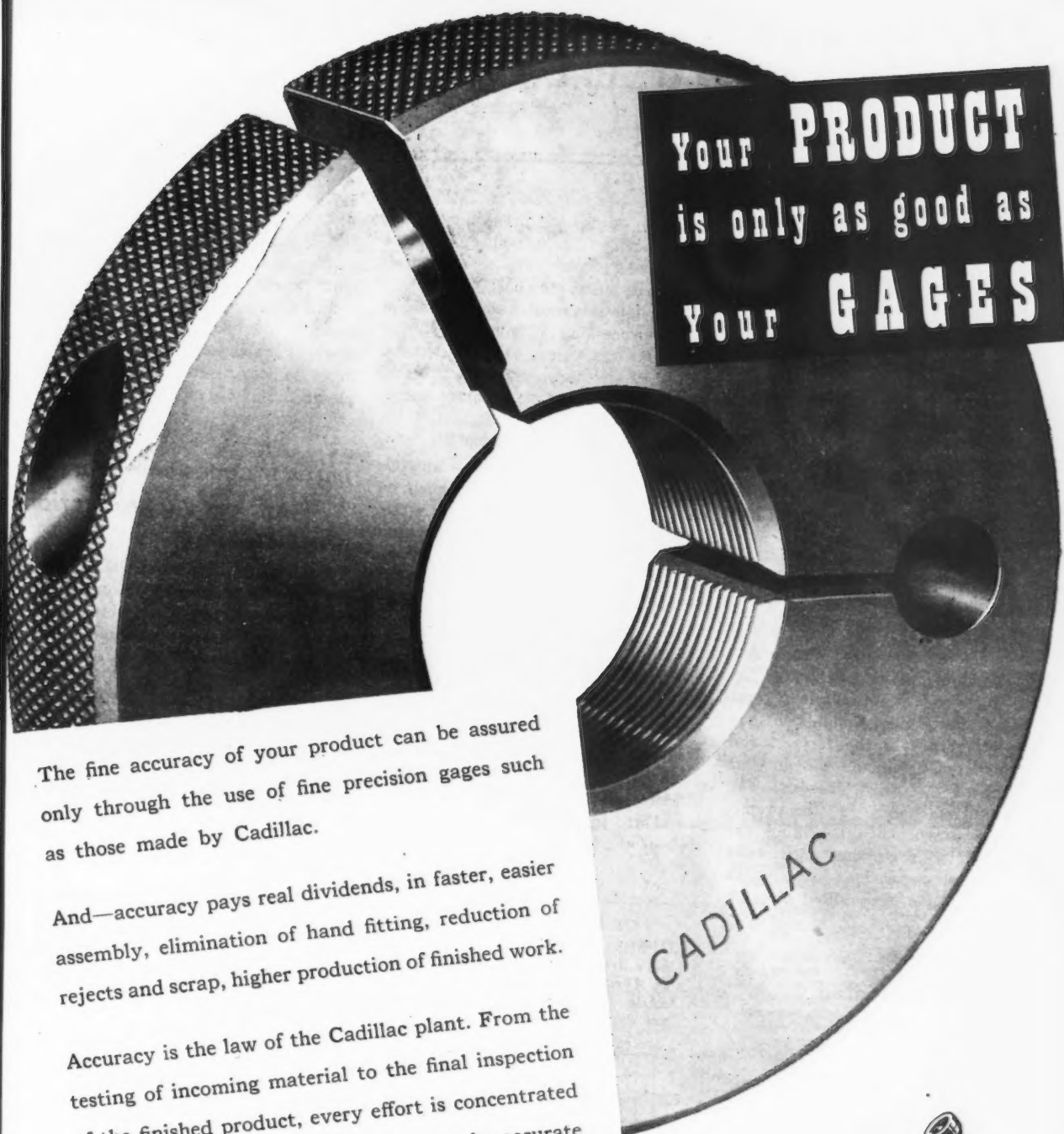
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THE IRON AGE, May 24, 1945—133



# NON-FERROUS METALS

... News and Market Activities

## Estimate Copper Needs Lower in May and June

New York

• • • The sharp drop in April copper deliveries shown by the chart tends to obscure the fact that delivery of 161,000 tons represents a very large monthly delivery schedule, more than twice the tonnage of domestic production.

Producers believe that May deliveries will be somewhat below April's and, on the basis of preliminary commitments for June, that month may also be lower. However, there is no indication of easing of requirements in June for lake copper.

It is reported that the bills for extension of the Reciprocal Trade Act and premium price payments for metals have been reported out of committee. The Rules Committee has given preference to the former, and three days of debate on the floor of the House are to start Tuesday. The McFarland amendment to the premium price extension bill, calling for non-cancelable premiums until June 30, 1946, for copper, lead and zinc, is reported to have been killed in committee.

## Bismuth Supply Called Increasingly Short by ARCO

New York

• • • An increasingly critical supply position in bismuth is reported by the Operating Committee on Aircraft Materials Conservation, a joint activity of the Army and Navy air arms and the Aircraft Resources Control Office, as a result of significantly increased war production requirements, a decrease in imports, and the exhaustion in 1944 of residues used in the production of the metal.

Possibly 35 per cent of established uses are related to aircraft production, and pharmaceuticals require a large proportion of the balance. Since little or no reduction can be effected in the latter field of application, the aircraft and allied industries must assume a proportionate share of conservation of bismuth in order to assist in maintaining all essential applications, the Committee said.

Used for low melting point alloys

for tube bending, and for the construction of jigs, fixtures, and setting or anchoring dies, punches, etc., the Committee recommends that existing stocks be used to best advantage, holding idle inventories to a minimum and reprocessing bismuth-containing jigs, fixtures, dies, etc., that have served their purpose. It is recommended that there be no move to replace this metal with cadmium which is likewise in a critical position.

Special alloys in which bismuth is used to improve properties, such as machinability, acceptable alternative materials, should be considered, and whether the special properties are essential, it was said by the Committee.

## Krug Seeks Lead Miners

Washington

• • • WPB Chairman J. A. Krug and WMC Chairman Paul V. McNutt have declared that unless lead production is increased substantially, lack of this metal will interfere with the prosecution of the war against Japan. Mr.

Krug said that lead mines are in a position to increase their output if a few thousand workers could be added to the present number employed. He said workers should apply to the USES offices located in lead producing areas. Mr. Krug also urged war workers released from war plants after military cutbacks to take employment in lead mines.

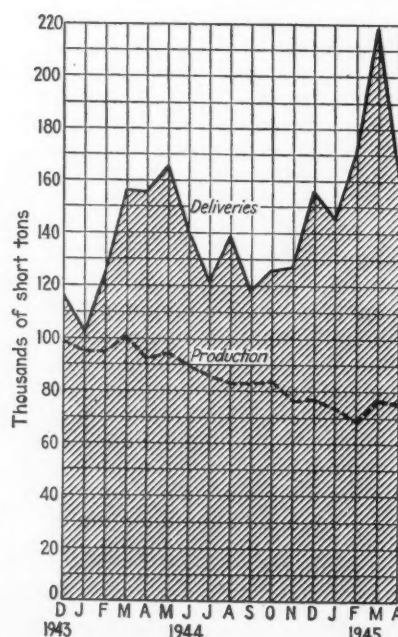
## Three Magnesium Plants Now in Full Production

New York

• • • Because the incendiary bomb program and aircraft requirements have reduced the magnesium stockpile to approximately 135 million lb., according to trade sources estimated to be sufficient for about five months requirements, DPC has authorized the return of three magnesium plants to full production at WPB request.

These include the plant at Velasco, Texas operated by the Dow Magnesium Corp. and held in standby condition since December, 1944; the plant at Painesville, Ohio operated by the Diamond Magnesium Corp.; and the plant at Luckey, Ohio operated by the Magnesium Reduction Co., the two latter plants being limited to 50 per cent of rated capacity since December 31.

COPPER PICTURE: Deliveries have dropped more than 50,000 tons in April from March's peak; meanwhile production continues a gradual decline.



## WPB Issues Overall List Of Critical Metal Supplies

Washington

• • • Made public as an overall guide for industry as it prepares for civilian production, WPB last week issued a list of products which are expected to remain in short supply despite the fact that V-E Day speeded the modification and revocation of WPB controls on many items. It was pointed out that the list is not in any sense either complete or hard and fast and that changes in the supply situation of other materials will probably alter the picture considerably in the coming months. Among the metals included in the list are antimony and antimony oxide; cadmium, corundum, certain grades of graphite, lead, certain grades of mica, tin and certain ferroalloys.

# NONFERROUS METALS PRICES

## Primary Metals

(Cents per lb., unless otherwise noted)

Aluminum, 99+%, del'd (Min. 10,000 lb.)	15.00
Antimony, American, Laredo, Tex.	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb. contained Be	\$17.00
Cadmium, del'd	90.00
Cobalt, 97-99% (per lb.)	\$1.50 to \$1.57
Copper, electro, Conn. valley	12.00
Copper, electro, New York	11.75
Copper, lake	12.00
Gold, U. S. Treas., dollars per oz.	\$35.00
Iridium, 99.9%, dollars per troy oz.	\$4.00
Iridium, dollars per troy oz.	\$120.00
Lead, St. Louis	6.35
Lead, New York	6.50
Magnesium, 99.9 + %, carlots	20.50
Magnesium, 12-in. sticks, carlots	27.50
Mercury, dollars per 76-lb. flask, f.o.b. New York	\$154.00 to \$157.00
Nickel, electro	35.00
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per oz.	\$35.00
Silver, open market, New York, cents per cent	44.75
Tin, Straits, New York	52.00
Zinc, East St. Louis	8.25
Zinc, New York	8.65

## Remelted Metals

(Cents per lb. unless otherwise noted)

Aluminum, No. 12 Fdy. (No. 2)	9.00 to 10.00
Aluminum, deoxidizing	
No. 2, 3, 4	\$6.00 to 9.50
Brass Ingot	
85-5-5-5 (No. 115)	13.25
88-10-2 (No. 215)	16.75
80-10-10 (No. 305)	16.00
No. 1 Yellow (No. 405)	10.25

## Copper, Copper Base Alloys

(Mill base, cents per lb.)

	Extruded Shapes	Rods	Sheets
Copper	20.37	20.37	
Copper, H.R.		17.37	
Copper drawn		18.37	
Low brass, 80%		20.40	20.15
High brass			19.48
Red brass, 85%		20.61	20.36
Naval brass	20.37	19.12	24.50
Brass, free cut		15.01	
Commercial bronze, 90%		21.32	21.07
Commercial bronze, 95%		21.53	21.23
Manganese bronze	24.00		28.00
Phos. bronze, A, B, 5%		36.50	36.25
Muntz metal	20.12	18.87	22.75
Everdur, Herculex, Olympic or equal		25.50	26.00
Nickel silver, 5%		28.75	26.50
Architect bronze	19.12		

## Aluminum

(Cents per lb., subject to extras on gage, size, temper, finish, factor number, etc.)

Tubing: 2 in. O.D. x 0.065 in. wall 2S, 40c. (1/2H); 52S, 61c. (O); 24S, 67 1/2c. (T).	
Plate: 0.250 in. and heavier: 2S and 3S, 21.2c.; 52S, 24.2c.; 61S, 22.3c.; 24S, 24.2c.	
Flat Sheet: 0.188 in. thickness: 2S and 3S, 22.7c. a lb.; 52S, 26.2c.; 61S, 24.7c.; 24S, 26.7c.	

2000-lb. base for tubing; 30,000-lb. base for plate, flat stock.

Extruded Shapes: "As extruded" temper; 2000-lb. base, 2S and 3S, factor No. 1 to 4, 25.5c.; 14S, factor No. 1 to 4, 35c.; 17S, factor No. 1 to 4, 31c.; 24S, factor No. 1 to 4, 34c.; 53S, factor No. 1 to 4, 28c.; 61S, factor No. 1 to 4, 23 1/2c.

The factor is determined by dividing perimeter of shape by weight per lineal foot.

Wire Rod and Bar: Base price; 17ST and 11ST-3, screw machine stock. Rounds: 1/4 in., 28 1/2c. per lb.; 1/2 in., 26c.; 1 in., 24 1/2c.; 2 in., 23c. Hexagonals: 1/4 in., 34 1/2c. per lb.; 1/2 in., 28 1/2c.; 1 in., 25 1/2c.; 2 in., 25 1/2c. 2S, as fabricated, random or standard lengths, 1/4 in., 24c. per lb.; 1/2 in., 25c.; 1 in., 24c.; 2 in.,

23c. 24ST, rectangles and squares, random or standard lengths. 0.093-0.137 in. thick by 1.001-2.000 in. wide, 33c. per lb.; 0.751-1.500 in. thick by 2.001-4.000 in. wide, 29c.; 1.501-2.000 in. thick by 4.001-6.000 in. wide, 27 1/2c.

## Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb. or more, 46c. a lb.; 25 to 90 lb., 56c.; less than 25 lb., 66c.

## NONFERROUS SCRAP METAL QUOTATIONS

†(OPA basic maximum prices, cents per lb., f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

### Copper, Copper Base Alloys

#### OPA Group 1†

No. 1 wire, No. 1 heavy copper	9.75
No. 1 tinned copper wire, No. 1 tinned heavy copper	9.75
No. 2 wire, mixed heavy copper	8.75
Copper tuyeres	8.75
Light copper	7.75
Copper borings	9.75
No. 2 copper borings	8.75
Lead covered copper wire, cable	6.00*
Lead covered telephone, power cable	6.04
Insulated copper	5.10*

#### OPA Group 2†

Bell metal	15.50
High grade bronze gears	13.25
High grade bronze solids	11.50*
Low lead bronze borings	11.50*
Babbitt lined brass bushings	13.00
High lead bronze solids	10.00*
High lead bronze borings	10.00*
Tinny (phosphor bronze) borings	10.75
Tinny (phosphor bronze) solids	10.50
Copper-nickel solids and borings	9.25
Bronze paper mill wire cloth	9.50
Aluminum bronze solids	9.00
Soft red brass (No. 1 composition)	9.00
Soft red brass borings (No. 1)	9.00
Gilding metal turnings	8.50
Contaminated gilded metal solids	8.50
Unlined standard red car boxes	8.25
Lined standard red car boxes	7.75
Cocks and faucets	7.75
Mixed brass screens	7.75
Red brass breakage	7.50
Old nickel silver solids, borings	6.25
Copper lead solids, borings	6.25
Yellow brass castings	6.25
Automobile radiators	7.00
Zincy bronze borings	8.00
Zincy bronze solids	8.00

#### OPA Group 3†

Fired rifle shells	8.25
Brass pipe	7.50
Old rolled brass	7.00
Admiralty condenser tubes	7.50
Muntz metal condenser tubes	7.00
Plated brass sheet, pipe reflectors	6.50
Manganese bronze solids	7.35 <sup>1</sup>
Manganese bronze solids	6.25 <sup>2</sup>
Manganese bronze borings	6.50 <sup>1</sup>
Manganese bronze borings	5.50 <sup>2</sup>

#### OPA Group 4†

Refinery brass	4.75*
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\*Price varies with analysis. <sup>1</sup>Lead content 0.00 to 0.40 per cent. <sup>2</sup>Lead content 0.41 to 1.00 per cent.

### Other Copper Alloys

Briquetted Cartridge Brass Turnings	8.625
Cartridge Brass Turnings, Loose	7.875
Loose Yellow Brass Trimmings	7.875

## Aluminum

### Plant scrap, segregated

2S solids	8.00
Dural alloys, solids 14, 17, 18, 24S	
25S	5.00
turnings, dry basis	3.00
Low copper alloys 51, 52, 61, 68S	
solids	7.50
turnings, dry basis	5.75

### Plant scrap, mixed

Solids	4.00
Turnings, dry basis	2.50

### Obsolete scrap

Pure cable	8.00
Old sheet and utensils	6.00
Old castings and forgings	5.00
Pistons, free of struts	5.00
Pistons, with struts	3.00
Old alloy sheet	5.00

## Magnesium\*

### Segregated plant scrap

Pure solids and all other solids, exempt	
Borings and turnings	1.50

### Mixed, contaminated plant scrap

Grade 1 solids	3.00
Grade 1 borings and turnings	2.00
Grade 2 solids	2.00
Grade 2 borings and turnings	1.00

\*Nominal.

## Zinc

New zinc clippings, trimmings	6.50
Engravers, lithographers plates	6.50
Old zinc scrap	4.75
Unswaged zinc dross	5.00
Die cast slab	4.50
New die cast scrap	4.45
Radiator grilles, old and new	3.50
Old die cast scrap	3.00

## Lead

Deduct 0.55c. a lb. from refined metal basing point prices or soft and hard lead including cable, for f.o.b. point of shipment price.

## Nickel

NI content 98+%, Cu under 1/2%, 26c. per lb.; 90 to 98% Ni, 26c. per lb. contained Ni.

## ELECTROPLATING ANODES AND CHEMICALS

### Anodes

(Cents per lb., f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	25 1/2
Electrodeposited	18 1/2
Rolled, oval, straight	19 1/2
Curved	20 1/2
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer	23 1/2
Zinc, cast, 99.99, 15 in. or longer	16 1/2
Nickel, 99 per cent plus, frt. allowed	
Cast	47
Rolled, depolarized	48
Silver, 999 fine	
Rolled, 1-9 troy oz., per oz.	58*

### Chemicals

(Cents per lb., f.o.b. shipping point)

Copper cyanide, 1-5 bbls.	34.00
Copper sulphate, 99.5, crystals, bbls.	7.75
Nickel salts, single, 425 lb. bbls., frt. allowed	13.50
Silver cyanide, 100 oz. lots	41.75
Sodium cyanide, 96 per cent, domestic, 100 lb. drums	15.00
Zinc cyanide, 100 lb. drums	33.00
Zinc sulphate, 39 per cent, crystals, bbls., frt. allowed	6.35

\*Price based on use of foreign silver.



## Market Drops Some; Waits Developments

### New York

• • • The districts continue to report lower turning prices this week, and in several districts there is a drop in the price of open hearth scrap. Philadelphia dropped No. 1 and No. 2 heavy melting by 50c. a ton.

There is a feeling of conflicting developments price-wise in the trade with limited scrap inventories in the hands of consumers and dealers, as indicated by long distance shipments of scrap exerting pressure for price increases, and imminent cutbacks in war contracts tending to produce scrap demand, and therefore prices. Some dealers think that the action of OPA in granting price increases on steel products this week may serve to clarify a very clouded market picture.

It is obvious from the tenor of the district reports that in general all factors in the industry are moving cautiously in order to assure mill supplies and yet not accumulate large quantities of scrap at prices which might be well above the market in a few weeks were wholesale cancellations to be instituted. Apparently cutbacks have become a factor in the scrap market only in Pittsburgh and Detroit, but as yet there have been no price changes directly attributable to this market factor. There is no assurance that this condition can long prevail.

The scrap supply position is apparently unbalanced throughout the country with Pittsburgh mills buying as far afield as New York and St. Louis and other markets reporting ample reserves of scrap.

**PITTSBURGH**—Further cuts in the shell program in this district, as well as in allied programs, will likely result in the tightening of turnings and low phos supplies. However, there has been no indication that such is the case as yet. The market on turnings and alloy scrap is very selective while the demand for carbon grades is very strong. Curiously, the short shoveling turnings price holds its own in the face of falling prices on mixed and machine shop turnings. With a \$4.50 spread at present market quotations on machine shop turnings, crushers should be having a field day. In fact, the business looks so good that at least one dealer is seriously considering the installation of a crusher.

**DETROIT**—Brightening skies after two weeks of nearly steady rain speeded ship-

ments from dealer yards this week in order to fill May commitments. Arrival of automotive lists confirmed feeling that available quantity of production scrap is lessening due to war plant cutbacks. Prices continued unchanged.

**BUFFALO**—Light industrial scrap, which has been shaky for the last month, dropped \$1 a ton during the past week on scattered sales. Short shovelings were an exception to this sweeping decline, being quoted at \$14 to \$14.50 against \$15 previously. Machine shop turnings were listed at \$12, with demand limited at this figure. Heavy scrap was unaffected by the weakness at the other end of the list, although the lull in mill buying continued. Inquiry for cast iron and low phos items is brisk, with some consumers buying into July. High water in the Barge Canal system is seriously retarding the movement of several fleets loaded with scrap from the seaboard. Bethlehem held up shipments of scrap for about 48 hours during the strike at the Lackawanna plant, but yards reported no serious inconvenience and the embargo was lifted as soon as the walkout ended.

**BOSTON**—Price structure has become somewhat befuddled. Some buyers quote machine shop turnings at \$5.50 a ton on cars; others, sales at \$6. Only sales of shoveling turnings reported are at \$6.50 a ton for Pittsburgh delivery. Some Pennsylvania mills are taking Nos. 1 and 2 steel at ceilings; others offer \$2 a ton less for No. 2 and have dropped offers for bundles as much. Price cutters are getting little material, however. Foundries and gas purifiers continue to pay ceilings for requirements.

**PHILADELPHIA**—Although most mills are again purchasing scrap, quantities ordered are no way near average. Prices here are continuing their downward trend with heavy grades going at \$17.75 to \$18.25 this week. No. 2 bundles are \$15.75 to \$16.25. Cast remains strong as the supply can in no way meet the tremendous demand for these grades. Turnings continue at \$9.00 to \$9.50.

**NEW YORK**—Scrap continues to be shipped from this district to western Pennsylvania and dealers say that there is some evidence of concern on the part of local mills over the loss of the scrap. Prices continue unchanged with a \$2.50 spread in open hearth grades to cover scrap movement at both ends of the spread. A number of Bethlehem's contracts terminate this week, and in view of the tight scrap supply some dealers foresee an immediate prospect of price increase.

**CLEVELAND**—V-E Day has had little effect on the market here, which continues firm with the exception of machine shop turnings. There is still a great demand for heavy grades, although the

entire situation here is characterized by a lack of activity. Big inventories are being avoided and what buying there has been is for current needs.

**ST. LOUIS**—Ample scrap reserves here have almost eliminated new orders from big melters, which are accepting only unexpired commitments. Shipments are good, with most St. Louis scrap moving to Chicago. Some railroad and cast iron scrap is moving locally but the latter is weakening. Machine turnings are offered freely. Collapse of new orders is attributed to a waiting policy by melters, whose cutbacks have not passed the paper stage. Prices are unchanged.

**CINCINNATI**—Further weakness is indicated in turnings and borings during the past week, and as a result of this situation prices on these items are down 50c. Other items continue to be strong, with sale, although not plentiful, still at ceiling price. With yard labor still scarce, dealers are hesitant to accept too much of current offerings requiring preparation unless prices are sufficiently low to cushion the sudden weakening of the market after V-E Day. Activity is not very brisk, although dealers report mills are accepting good scrap on contract, but hesitant toward future commitments. Foundrymen continue to seek good cupola scrap, but hesitate on building too long inventories.

**BIRMINGHAM**—Continuing a policy of cautious buying, consumers are making little effort to build up inventories. No change in trend is evident here with prices remaining firm, open hearth grades still at the top of the list from a demand standpoint, electric furnace and foundry grades at the bottom.

**CHICAGO**—Conflicting tendencies permeate this market. Prime open hearth grades remain firm, although some tonnage was involved in cancellation of unfilled orders by one buyer. Successful placing of some orders for machine shop turnings at \$10.00 broadens the range at which this item is being sold. A contrary trend is evidenced by broker purchases at \$18.00 of bundled machine shop turnings, with an important mill consumer refusing to confirm reports of an order at \$18.50. This activity is regarded as sufficiently important to establish an unprecedentedly broad range to encompass previous mill sales and the new broker price. Mill confirmation would set the new price at \$18.00 to \$18.50.

### Luria Steel & Trading Moves New York

• • • The New York office of the Luria Steel & Trading Corp. has moved to the 28th floor of the Woolworth Building. Its operations are under the direction of Hess Noch, district manager.



# IRON AND STEEL SCRAP PRICES

Going prices as obtained in the trade by IRON AGE editors, based on representative tonnages (for ceiling prices see O. P. A. schedule No. 4). Where ceiling prices are quoted they do not include brokerage fee or adjusted transportation charges. Asterisks indicate grades selling at ceilings.

## PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$20.00*
RR. hvy. melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bldd. new shs.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	\$12.00 to 12.50
Short shov. turn.	16.00 to 16.50
Mixed bor. and turn.	12.00 to 12.50
Cast iron borings	15.00 to 15.50
Hvy. break. cast.	16.50*
No. 1 cupola	20.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Roller steel wheels	24.50*
Low phos. bil. crops	25.00*
Low phos.	22.50*
RR. malleable	22.00*

## CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	\$16.25 to 18.00
Galv. bundles	14.25 to 14.75
Mach. shop turn.	10.00 to 11.00
Short shovel. turn.	12.00 to 12.50
Cast iron borings	12.00 to 12.50
Mix. borings & turn.	12.00 to 12.50
Low phos. hvy. forge	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll. rails	22.25*
Miscellaneous rails	20.25*
Rails 3 ft. and under	22.25*
Locomotive tires, cut	22.50 to 23.00
Cut bolsters & side frames	19.75 to 20.25
Angles & Splice bars	22.25*
Standard stl. car axles	23.50 to 24.00
No. 3 steel wheels	22.00 to 22.50
Couplers & knuckles	23.25*
Agricul. malleable	22.00*
RR. malleable	22.00*
No. 1 mach. cast.	20.00*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	16.50*
RR. grate bars	15.25*
Cast iron brake shoes	15.25*
Stove plate	19.00*
Clean auto cast.	20.00*
Cast iron carwheels	20.00*

## CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	\$7.00 to 7.50
Shoveling turn.	8.00 to 8.50
Cast iron borings	8.00 to 8.50
Mixed bor. & turn.	7.00 to 7.50
Low phos. plate	22.00*
No. 1 cupola cast.	20.00*
Hvy. breakable cast	16.50*
Stove plate	19.00*
Scrap rails	21.00

## BOSTON

Dealers' buying prices per gross ton, f.o.b. cars

No. 1 hvy. melting	\$15.05*
No. 2 hvy. melting	15.05*
No. 1 and 2 bundles	15.05*
Busheling	14.06
Turnings, shovels	6.50
Machine shop turn.	5.50 to 6.00
Mixed bor. & turn.	5.50 to 6.00
Cl'n cast, chem. bor.	13.06 to 14.15*

Truck delivery to foundry

Machinery cast	21.00 to 23.51*
Breakable cast	21.57 to 21.87*
Stove plate	20.00 to 23.51*

## DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	\$17.32*
No. 2 hvy. melting	17.32*
No. 1 bundles	17.32*
New busheling	17.32*
Flashings	17.32*
Mach. shop turn.	\$7.50 to 8.00
Short shov. turn.	10.25 to 10.75
Cast iron borings	9.50 to 10.00
Mixed bor. & turn.	7.50 to 8.00
Low phos. plate	19.32 to 19.82
No. 1 cupola cast.	20.00*
Charging box cast.	18.00 to 19.00
Hvy. breakable cast	16.50*
Stove plate	18.50 to 19.00
Automotive cast	20.00*

## PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$17.75 to 18.25
No. 2 hvy. melting	17.75 to 18.25
No. 2 bundles	15.75 to 16.25
Mach. shop turn.	9.00 to 9.50
Shoveling turn.	10.50 to 11.50
Cast iron borings	11.00 to 11.50
Mixed bor. & turn.	9.00 to 9.50
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Cast, charging box	19.00*
Hvy. axle, forge turn.	17.00 to 17.50
Low phos. plate	20.25 to 21.25
Low phos. punchings	20.25 to 21.25
Billet crops	20.25 to 21.25
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

## ST. LOUIS

Per gross ton delivered to consumer:

Heavy melting	\$17.50*
Bundled sheets	17.50*
Mach. shop turn.	\$7.00 to 7.50
Hvy. axle turn.	12.00 to 12.50
Locomotive tires, uncut.	20.00*
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.00*
RR. springs	21.50*
Steel car axles	23.50*
Stove plate	19.00*
Grate bars	15.25*
Brake shoes	15.25*
RR. malleable	22.00*
Cast iron carwheels	20.00*
No. 1 mach'ry cast	20.00*
Breakable cast	16.50*

## BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 busheling	17.00*
Long turnings	\$9.50 to 10.00
Cast iron borings	9.50 to 10.00
Bar crops and plate	19.50*
Structural and plate	19.50*
No. 1 cast	20.00*
Stove plate	17.00
Steel axles	18.00*
Scrap rails	18.50
Rerolling rails	20.50*
Angles & splice bars	20.50*
Rails 3 ft. & under	21.00*
Cast iron carwheels	16.50 to 17.00

## YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$20.00*
No. 2 hvy. melting	20.00*
Low phos. plate	22.50*
No. 1 busheling	20.00*
Hvdraulic bundles	20.00*
Mach. shop turn.	\$11.50 to 12.00
Short shovel. turn.	15.00 to 15.50
Cast iron borings	14.00 to 14.50

## NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$12.83 to \$15.33
No. 2 hvy. melting	12.83 to 15.33
Comp. black bundles	11.83 to 12.83
Comp. galv. bundles	9.83 to 10.83
Mach. shop turn.	6.50
Mixed bor. & turn.	6.50
Shoveling turn.	8.50
No. 1 cupola cast.	20.00*
Hvy. breakable cast	16.50*
Charging box cast.	19.00*
Stove plate	19.00*
Clean auto cast.	20.00*
Unstrip. motor blks.	17.50*
Cl'n chem. cast bor.	14.33*

## BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	12.00
Shoveling turn.	14.00 to 14.50
Cast iron borings	13.00
Mixed bor. & turn.	12.00
No. 1 cupola cast.	20.00*
Stove plate	19.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron car wheels	20.00*
RR. ool & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
RR. malleable	22.00*
No. 1 busheling	19.25*

## CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00*
No. 2 bundles	19.50*
Mach. shop turn.	\$10.00 to 10.50
Short shovel.	14.00 to 14.50
No. 1 busheling	19.50*
Steel axle turn.	19.00*
Low phos. billet and bloom crops	24.50*
Cast iron borings	13.00 to 13.50
Mixed bor. & turn.	12.00 to 12.50
No. 2 busheling	17.00*
No. 1 machine cast	20.00*
Railroad cast	20.00*
Railroad grate bars	15.25*
Stove plate	19.00*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Railroad malleable	22.00*
Elec. furnace punch	22.00*

## SAN FRANCISCO

Per gross ton delivered to consumer:

RR. hvy. melting	\$17.00*
No. 1 hvy. melting	17.00*
No. 2 hvy. melting	17.00*
No. 2 bales	13.50 to 14.25
No. 3 bales	9.50 to 10.50
Mach. shop turn.	7.00
Elec. furn. 1 ft. und.	15.50 to 17.00
No. 1 cupola cast.	19.00 to 21.00

## LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$14.50 to \$15.50
No. 2 hvy. melting	13.50 to 14.50
No. 2 bales	12.50 to 13.50
No. 3 bales	9.00 to 10.00
Mach. shop turn.	4.50
No. 1 cupola cast.	19.00 to 21.00

## SEATTLE

Per gross ton delivered to consumer:

RR. hvy. melting	\$14.50
No. 1 hvy. melting	14.50*
No. 3 bundles	11.50
Elec. furn. 1 ft. und.	17.00
No. 1 cupola cast.	20.00*

# Comparison of Prices . .

Advances Over Past Week in Heavy Type; Declines in Italics. Prices are F.O.B. Major Basing Points. The various basing points for finished and semi-finished steel are listed in the detailed price tables, pages 140-149.

Flat Rolled Steel:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Cents Per Lb.)	1945	1945	1945	1944
Hot rolled sheets.....	2.20	2.20	2.20	2.10
Cold rolled sheets.....	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.65	3.65	3.65	3.50
Hot rolled strip.....	2.10	2.10	2.10	2.10
Cold rolled strip.....	2.80	2.80	2.80	2.80
Plates.....	2.20	2.20	2.20	2.10
Plates, wrought iron.....	3.80	3.80	3.80	3.80
Stain's c.r. strip (No. 302)	28.00	28.00	28.00	28.00

Tin and Terne Plate:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Dollars Per Base Box)				
Tin plate, standard cokes	\$5.00	\$5.00	\$5.00	\$5.00
Tin plate, electrolytic....	4.50	4.50	4.50	4.50
Special coated mfg. ternes	4.30	4.30	4.30	4.30

Bars and Shapes:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Cents Per Lb.)				
Merchant bars.....	2.15	2.15	2.15	2.15
Cold finished bars.....	2.65	2.65	2.65	2.65
Alloy bars.....	2.70	2.70	2.70	2.70
Structural shapes.....	2.10	2.10	2.10	2.10
Stainless bars (No. 302)...	24.00	24.00	24.00	24.00
Wrought iron bars.....	4.40	4.40	4.40	4.40

Wire and Wire Products:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Cents Per Lb.)				
Plain wire.....	2.60	2.60	2.60	2.60
Wire nails.....	2.80	2.80	2.80	2.55

Rails:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Dollars Per Gross Ton)				
Heavy rails.....	\$43.00	\$43.00	\$43.00	\$40.00
Light rails.....	43.00	43.00	43.00	40.00

Semi-Finished Steel:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Dollars Per Gross Ton)				
Rerolling billets.....	\$34.00	\$34.00	\$34.00	\$34.00
Sheet bars.....	34.00	34.00	34.00	34.00
Slabs, rerolling.....	34.00	34.00	34.00	34.00
Forging billets.....	40.00	40.00	40.00	40.00
Alloy blooms, billets, slabs	54.00	54.00	54.00	54.00

Wire Rods and Skelp:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Cents Per Lb.)				
Wire rods.....	2.00	2.00	2.00	2.00
Skelp.....	1.90	1.90	1.90	1.90

Latest steel interim price increase authorized by OPA effective Jan. 11, 1945.

Pig Iron:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Per Gross Ton)				
No. 2 fdy., Philadelphia...	\$26.84	\$26.84	\$26.84	\$25.84
No. 2, Valley furnace....	25.00	25.00	25.00	24.00
No. 2, Southern, Cin'ti...	26.11	26.11	26.11	25.11
No. 2, Birmingham.....	21.38	21.38	21.38	20.38
No. 2, foundry, Chicago†	25.00	25.00	25.00	24.00
Basic, del'd eastern Pa...	26.34	26.34	26.34	25.34
Basic, Valley furnace....	24.50	24.50	24.50	23.50
Malleable, Chicago†.....	25.00	25.00	25.00	24.00
Malleable, Valley.....	25.00	25.00	25.00	24.00
L. S. charcoal, Chicago*	42.34	42.34	42.34	37.34
Ferromanganese†.....	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60c. per ton.  
† For carlots at seaboard.

Last pig iron price change authorized by OPA effective Feb. 14, 1945.

\* Charcoal price increase retroactive to March 7, on contracts to Feb. 13.

Scrap:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Per Gross Ton)				
Heavy melt'g steel, P'gh.	\$20.00	\$20.00	\$20.00	\$20.00
Heavy melt'g steel, Phila.	18.00	18.50	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.85
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh...	20.00	20.00	20.00	20.00
No. 1 cast, Philadelphia.	20.00	20.00	20.00	20.00
No. 1 cast, Chicago.....	20.00	20.00	20.00	20.00

Coke, Connellsville:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Per Net Ton at Oven)				
Furnace coke, prompt...	\$7.00	\$7.00	\$7.00	\$7.00
Foundry coke, prompt...	8.25	8.25	8.25	8.25

Non-Ferrous Metals:	May 22, 1945	May 15, 1945	Apr. 17, 1945	May 23, 1944
(Cents Per Lb. to Large Buyers)				
Copper, electro., Conn....	12.00	12.00	12.00	12.00
Copper, Lake.....	12.00	12.00	12.00	12.00
Tin (Straits), New York.	52.00	52.00	52.00	52.00
Zinc, East St. Louis.....	8.25	8.25	8.25	8.25
Lead, St. Louis.....	6.35	6.35	6.35	6.35
Aluminum, Virgin, del'd..	15.00	15.00	15.00	15.00
Nickel, electrolytic.....	35.00	35.00	35.00	35.00
Magnesium, ingot.....	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex...	14.50	14.50	14.50	14.50

Starting with the issue of April 22, 1943, the weighted finished steel price index was revised for the years 1941, 1942 and 1943. See explanation of the change on page 90 of the April 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.

## Composite Prices . .

FINISHED STEEL	May 22, 1945
One week ago.....	2.38444c. a Lb.....
One month ago.....	2.38444c. a Lb.....
One year ago.....	2.30329c. a Lb.....

HIGH	LOW
1945..... 2.38444c., Jan. 16	2.21189c., Jan. 2
1944..... 2.30837c., Sept. 5	2.21189c., Oct. 5
1943..... 2.25513c.	2.25513c.
1942..... 2.26190c.	2.26190c.
1941..... 2.43078c.	2.43078c.
1940..... 2.30467c., Jan. 2	2.24107c., Apr. 16
1939..... 2.35367c., Jan. 3	2.26689c., May 16
1938..... 2.58414c., Jan. 4	2.27207c., Oct. 18
1937..... 2.58414c., Mar. 9	2.32263c., Jan. 4
1936..... 2.32263c., Dec. 28	2.05200c., Mar. 10
1935..... 2.07642c., Oct. 1	2.06492c., Jan. 8
1934..... 2.15367c., Apr. 24	1.95757c., Jan. 2
1933..... 1.95578c., Oct. 3	1.75836c., May 2
1932..... 1.89196c., July 5	1.83901c., Mar. 1
1931..... 1.99626c., Jan. 13	1.86586c., Dec. 29
1930..... 2.25488c., Jan. 7	1.97319c., Dec. 9
1929..... 2.31773c., May 28	2.26498c., Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 per cent of the United States output. Index recapitulated in Aug. 28, 1941, issue.

PIG IRON	May 22, 1945
One week ago.....	\$24.61 a Gross Ton.....
One month ago.....	\$24.61 a Gross Ton.....
One year ago.....	\$23.61 a Gross Ton.....

HIGH	LOW
\$24.61, Feb. 20	\$23.61, Jan. 2
\$23.61	\$23.61
25.61	23.61
23.61	23.61
\$23.61, Mar. 20	\$23.45, Jan. 2
23.45, Dec. 23	22.61, Jan. 2
22.61, Sept. 19	20.61, Sept. 12
23.25, June 21	19.61, July 6
23.25, Mar. 9	20.25, Feb. 16
19.74, Nov. 24	18.73, Aug. 11
18.84, Nov. 5	17.83, May 14
17.90, May 1	16.90, Jan. 27
16.90, Dec. 5	13.56, Jan. 3
14.81, Jan. 5	13.56, Dec. 6
15.90, Jan. 6	14.79, Dec. 15
18.21, Jan. 7	15.90, Dec. 16
18.71, May 14	18.21, Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

SCRAP STEEL	May 22, 1945
One week ago.....	\$18.92 a Gross Ton.....
One month ago.....	\$19.08 a Gross Ton.....
One year ago.....	\$19.17 a Gross Ton.....

HIGH	LOW
\$19.17	\$19.17
19.17	\$15.67, Oct. 24
19.17	19.17
19.17	19.17
\$22.00, Jan. 7	\$19.17, Apr. 10
21.83, Dec. 30	16.04, Apr. 9
22.50, Oct. 3	14.08, May 16
15.00, Nov. 22	11.00, June 7
21.92, Mar. 30	12.67, June 8
17.75, Dec. 21	12.67, June 9
13.42, Dec. 10	10.33, Apr. 29
13.00, Mar. 13	9.50, Sept. 25
12.25, Aug. 8	6.75, Jan. 3
8.50, Jan. 12	6.43, July 5
11.33, Jan. 6	8.50, Dec. 29
15.00, Feb. 18	11.25, Dec. 9
17.58, Jan. 29	14.08, Dec. 3

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.



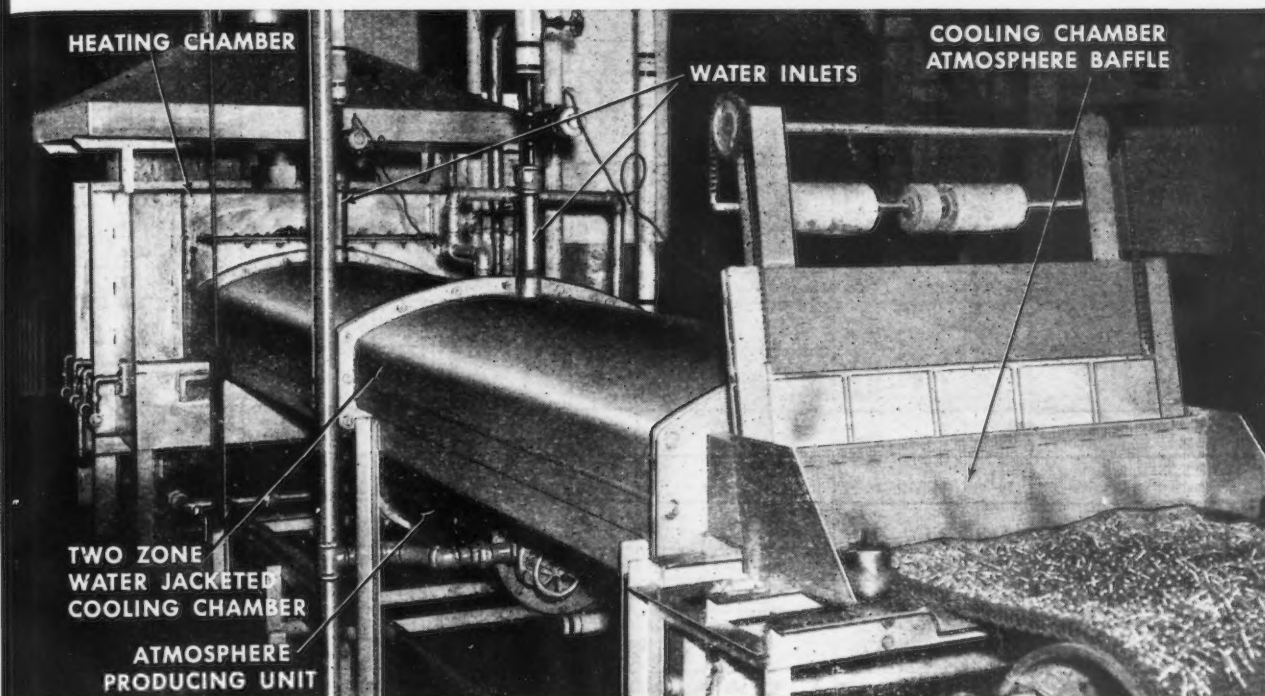


# STEWART

THE BEST INDUSTRIAL FURNACES MADE

No. 57  
OF A  
SERIES  
of Typical  
Installations

**For HARDENING AND BRIGHT ANNEALING P-K PRODUCTS**  
at the Parker-Kalon Corporation, New York, N. Y.



Discharge end of Stewart Bright Annealing Furnace showing blanks for P-K Thumb Screws coming off the conveyor belt. At the time this photograph was taken, the furnace had been operating day and night for approximately 7000 hours without breakdown or trouble.

An important division of the Parker-Kalon operation is the Heat Treating Department. P-K Self-Tapping Screws, used in over 100,000 plants, must have sufficient surface hardness to form the thread in the metals, plastics, fibre, or hard rubber where fastenings are being made.

For this important hardening job, P-K use a Stewart Hardening Furnace which gives them a production of 600 to 800 pounds per hour. Stewart Gasifiers make oil economical for this full nickel chromium muffle unit. The 24-inch wide conveyor belt has an automatic take-up, and the quench tank is an integral part of the unit.

The Stewart Conveyor-type Hot Air Recirculating Unit at P-K has a production of 1000 pounds per hour of socket head cap screws, set screws, etc., drawn at temperatures up to 1200° F., with accuracy of 5° plus or minus.

The bright annealing of P-K Thumb Screws, etc. is done with a Stewart Full-Muffle Conveyor-type Bright Annealing Furnace. Since the installation of this furnace, it has been possible to eliminate all cleaning apparatus and to release six men formerly required for this operation to other work in the plant. They can now feed the work to the annealing furnace with the oil and grease from the machining operation still on them and have

them come out perfectly clean and uniform.

This installation is typical of the industrial furnaces Stewart engineers are building every day, both large types to meet the specified requirements of manufacturers all over the continent, and a complete line of standard types.



Charging end of the Stewart Bright Annealing Furnace.

## STEWART INDUSTRIAL FURNACE DIVISION of CHICAGO FLEXIBLE SHAFT CO.

Main Office: 5600 W. Roosevelt Road, Chicago 50, Ill. — Canada Factory: (FLEXIBLE SHAFT CO., LTD.) 321 Weston Rd., So., Toronto 9

A letter, wire or 'phone call will promptly bring you information and details on STEWART furnaces, either units for which plans are now ready or units especially designed to meet your needs. Or, if you prefer, a STEWART engineer will be glad to call and discuss your heat treating problems with you.



# Prices of Finished Iron and Steel...

Steel prices shown here are f.o.b. basing points, in cents per lb. unless otherwise indicated. Extras apply. Delivered prices do not reflect 3% tax on freight. (1) Mill run sheet, 10c. per 100 lb. under base; primes, 25c. above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25c. per 100 lb. to fabricators. (8) Also shafting. For quantities of 20,000 to 29,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (12) Boxed. (13) Portland and Seattle price, San Francisco 2.50c. (14) This base price for annealed, bright finish wires, commercial spring wire. (15) Deduct 10c. per 100 lb. for plates not produced to sheared mill or universal mill width and length tolerances.

Basing Point Product	DELIVERED TO														
	Pitts- burgh	Chicago	Gary	Cleve- land	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars	10 Pacific Ports, Cars	Detroit	New York	Phila- delphia
<b>SHEETS</b>															
Hot rolled	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.30¢	2.20¢		2.75¢	2.30¢	2.44¢	2.37¢
Cold rolled <sup>1</sup>	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.15¢	3.39¢	3.37¢
Galvanized (24 gage)	3.65¢	3.65¢	3.65¢		3.65¢	3.65¢	3.65¢	3.65¢	3.75¢	3.65¢		4.20¢		3.89¢	3.82¢
Enameling (20 gage)	3.35¢	3.35¢	3.35¢	3.35¢			3.35¢		3.45¢	3.35¢		4.00¢	3.45¢	3.71¢	3.67¢
Long ternes <sup>2</sup>	3.80¢	3.80¢	3.80¢									4.55¢		4.16¢	4.12¢
<b>STRIP</b>															
Hot rolled <sup>3</sup>	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.20¢	2.46¢	
Cold rolled <sup>4</sup>	2.80¢	2.90¢		2.80¢			2.80¢		(Worcester=3.00¢)				2.90¢	3.16¢	
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢							2.56¢	
Commodity C-R	2.95¢	3.05¢		2.95¢			2.95¢		(Worcester=3.35¢)				3.05¢	3.31¢	
<b>TIN PLATE</b>															
Standard coles, base box	\$5.00	\$5.00	\$5.00						\$5.10					5.36¢	5.32¢
Electro, box															
0.25 lb.	\$4.35	\$4.35	\$4.35												
0.50 lb.	\$4.50	\$4.50	\$4.50						\$4.60						
0.75 lb.	\$4.65		\$4.65						\$4.75						
<b>BLACK PLATE</b>															
29 gage <sup>5</sup>	3.05¢	3.05¢	3.05¢						3.15¢			4.05¢ <sup>12</sup>			3.37¢
<b>TERNES, MFG.</b>															
Special coated, base box	\$4.30	\$4.30	\$4.30						\$4.40						
<b>BAR</b>															
Carbon steel	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			(Duluth=2.25¢)		2.50¢	2.80¢	2.25¢	2.49¢	2.47¢
Rail steel <sup>6</sup>	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢					2.50¢	2.80¢			
Reinforcing (billets) <sup>7</sup>	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.50¢	2.55¢ <sup>13</sup>	2.25¢	2.39¢	
Reinforcing (rail) <sup>7</sup>	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.50¢	2.55¢ <sup>13</sup>	2.25¢		2.47¢
Cold finished <sup>8</sup>	2.65¢	2.65¢	2.65¢	2.65¢		2.65¢			(Detroit=2.70¢)	(Toledo=2.80¢)			2.99¢	2.97¢	
Alloy, hot rolled	2.70¢	2.70¢				2.70¢			(Bethlehem, Massillon, Canton=2.70¢)				2.80¢		
Alloy, cold drawn	3.35¢	3.35¢	3.35¢	3.35¢		3.35¢							3.45¢		
<b>PLATES</b>															
Carbon steel <sup>14</sup>	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢		2.20¢	2.20¢	(Coatesville and Claymont=2.20¢)			2.55¢	2.75¢	2.42¢	2.39¢
Floor plates	3.35¢	3.35¢							2.45¢			3.70¢	4.00¢	3.71¢	3.67¢
Alloy	3.50¢	3.50¢				(Coatesville=3.50¢)						3.95¢	4.15¢	3.70¢	3.59¢
<b>SHAPES</b>															
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢			(Bethlehem=2.10¢)		2.45¢	2.75¢		2.27¢	2.215¢
<b>SPRING STEEL, C-R</b>															
0.26 to 0.50 Carbon	2.80¢			2.80¢					(Worcester=3.00¢)						
0.51 to 0.75 Carbon	4.30¢			4.30¢					(Worcester=4.50¢)						
0.76 to 1.00 Carbon	6.15¢			6.15¢					(Worcester=6.35¢)						
1.01 to 1.25 Carbon	8.35¢			8.35¢					(Worcester=8.55¢)						
<b>WIRE</b>															
Bright <sup>14</sup>	2.60¢	2.60¢		2.60¢	2.60¢				(Worcester=2.70¢)	(Duluth=2.65¢)		3.10¢			2.92¢
Galvanized															
Spring (High Carbon)	3.20¢	3.20¢		3.20¢					(Worcester=3.30¢)			3.70¢			3.52¢
<b>PILING</b>															
Steel Sheet	2.40¢	2.40¢				2.40¢						2.95¢			2.72¢

## EXCEPTIONS TO PRICE SCHED. NO. 6.

Slabs, per gross ton—Andrews Steel Co. \$41 basing pts.; Wheeling Steel Corp. (rerolling) 4 in. sq. or larger \$37.75 f.o.b. Portsmouth, Ohio; Empire Sheet & Tin Plate Corp. \$41; Phoenix Iron Co. (rerolling) \$41, (forging) \$47; Granite City Steel \$47.50; Kaiser Co. (rerolling) \$58.64, (forging) \$64.64, f.o.b. Los Angeles.

Blooms, per gross ton—Phoenix Iron Co. (rerolling) \$41; (forging) \$47; Pgh. Steel Co. (rerolling) \$38.25, (forging) \$44.25; Wheeling

Steel Corp. (rerolling) 4 in. sq. or larger \$37.75 f.o.b. Portsmouth; Kaiser Co. (rerolling) \$58.64, (forging) \$64.64, (shell steel) \$74.64 f.o.b. Los Angeles.

Sheet Bar, per gross ton—Empire Sheet & Tin Plate Co. \$39 mill; Wheeling Steel Corp. \$38 Portsmouth, Ohio.

Billets, Forging, per gross ton—Andrews Steel Co. \$50 basing pts.; Follansbee Steel Corp. \$49.50 Toronto, Ohio; Phoenix Iron Co. \$47 mill; Geneva Steel Co. \$64.64 f.o.b. Pacific Coast; Pittsburgh Steel Co. \$49.50; Kaiser

Co. \$64.64, (shell steel) \$74.64, f.o.b. Los Angeles.

Billets, Rerolling, per gross ton—Continental Steel Corp. may charge Acme Steel in Chicago switching area \$34 plus freight from Kokomo, Ind.; Northwestern Steel & Wire Co. (Lend-Lease) \$41 mill; Wheeling Steel Corp. 4 in. sq. or larger \$37.75, smaller \$39.50 f.o.b. Portsmouth, Ohio; Stanley Works may sell Washburn Wire Co. under allocation at \$39 Bridgeport, Conn.; Keystone Steel & Wire Co. may sell Acme Steel Co. at Chicago base, f.o.b. Peoria; Phoenix Iron Co. \$41 mill; Contin-

# PRICES

not ercial For (8) and inish and	Steel Corp. (1½ x 1½) \$39.50, (2 x 2) \$40.60 Kokomo, Ind. (these prices include \$1 size extra); Keystone Steel & Wire Co. \$36.40 Peoria; Connors Steel Co. \$50.60 Birmingham; Ford Motor Co. \$34 Dearborn, Mich.; Geneva Steel Co. \$58.64 f.o.b. Pacific Coast; Pgh. Steel Co. \$43.50; Kaiser Co. \$58.64 f.o.b. Los Angeles.
TO	Structural Shapes—Phoenix Iron Co. 2.35c. basing pts. (export) 2.50c. Phoenixville; Knoxville Iron Co. 2.30c. basing points; Kaiser Co. 3.20c. f.o.b. Los Angeles.
Phila- delphia	Rails, per gross ton—Sweet Steel Co. (rail steel) \$50 mill; West Virginia Rail Co. (lightweight) on allocation based Huntington, W. Va.; Colorado Fuel & Iron Corp., \$45 Pueblo.
2.37¢	Hot Rolled Plate—Granite City Steel Co. 2.65c. mill; Knoxville Iron Co. 2.25c. basing pts.; Kaiser Co. and Geneva Steel Co. 3.20c. Pacific Ports; Central Iron and Steel Co. 2.50c. basing points; Granite City Steel Co. 2.35c. Granite City.
3.37¢	
3.82¢	
3.67¢	
4.12¢	
	Merchant Bars—W. Ames Co., 10 tons and over, 2.85c. mill; Eckels-Nye Steel Corp. 2.50c. basing pts. (rail steel) 2.40c.; Phoenix Iron Co. 2.40c. basing pts.; Sweet Steel Co. (rail steel) 2.33c. mill; Joslyn Mfg. & Supply Co., 2.35c. Chicago; Calumet Steel Div., Borg Warner Corp. (8 in. mill bar), 2.35c. Chicago; Knoxville Iron Co., 2.30c. basing pts.; Laclede Steel Co., sales to LaSalle Steel granted Chicago base, f.o.b. Madison, Ill.; Milton Mfg. Co., 2.75c. f.o.b. Milton, Pa.
5.32¢	Pipe Skelp—Wheeling Steel Corp., Benwood, 2.05c.
	Reinforcing Bars—W. Ames & Co., 10 tons and over, 2.85c. mill; Sweet Steel Co. (rail steel), 2.33c. mill; Columbia Steel Co., 2.50c. Pacific Ports.
3.37¢	
	Cold Finished Bars—Keystone Drawn Steel Co. on allocation, Pittsburgh c.f. base plus 1/1 freight on hot rolled bars Pittsburgh to Spring City, Pa.; New England Drawn Steel Co. on allocation outside New England, Buffalo c.f. base plus c/1 freight Buffalo to Mansfield, Mass., f.o.b. Mansfield; Empire Finished Steel Corp. on allocation outside New England, Buffalo c.f. base plus c/1 freight Buffalo to plants, f.o.b. plant; Compressed Steel Shifting Co. on allocation outside New England, Buffalo base plus c/1 freight Buffalo to Readville, Mass. f.o.b. Readville; Medart Co. in certain areas, Chicago c.f. base plus c/1 freight Chicago to St. Louis, f.o.b. St. Louis.
2.47¢	
2.47¢	
2.97¢	
2.25¢	
3.67¢	
3.59¢	
2.215¢	
	Hot Rolled Strip—Joslyn Mfg. & Supply Co., 2.30c. Chicago; Knoxville Iron Co., 2.25c. basing pts.
	Hot Rolled Sheets—Andrews Steel Co., Middletown base on shipments to Detroit or area; Parkersburg Iron & Steel Co., 2.25c. Parkersburg.
2.92¢	
	Galvanized Sheets—Andrews Steel Co. 3.75c. basing pts.; Parkersburg Iron & Steel Co., 2.85c. Parkersburg; Continental Steel Co., Middletown base on Kokomo, Ind., product; Superior Sheet Steel Co., Pittsburgh base except for Lend-Lease.
3.52¢	
2.72¢	
	Pipe and Tubing—South Chester Tube Co. when priced at Pittsburgh, freight to Gulf Coast and Pacific Ports may be charged from Chester, Pa., also to points lying west of Harrisburg, Pa.
	Black Sheets—Empire Sheet and Tinplate Co., maximum base price mill is 2.45c. per 100 lb., with differentials, transportation charges, etc., provided in RPS. No. 6.
	Wire Products—Pittsburgh Steel Co., f.o.b. Pittsburgh, per 100 lb., rods, No. 5 to 9/32 in., 2.20c.; rods, heavier than 9/32, 2.35c.; bright wire, 2.725c.; bright nails, 2.90c.; lead and furnace annealed wire, 2.85c.; pot annealed wire, 2.85c.; galvanized barbed wire, 2.90c.; plain staples, 2.55c.; galvanized staples, 2.65c.; bright spring wire, 3.30c.; galvanized spring wire, 3.45c.

## PAGE *Stainless Steel* WIRE

FOR  
PRODUCTION



SHORT-CUTS

"Why not do it with wire?"

Many times that suggestion is a first step toward product improvement, production short-cuts, lower costs. PAGE often makes the suggestion—prepares a recommendation—provides the wire; round, flat or specially shaped.

In addition to various analyses of stainless steel, PAGE offers wire of high and low carbon steels, Armco ingot iron and special alloys in a wide range of tempers and finishes; packaged in coils or straight lengths to meet your requirements.

PAGE offers you the benefit of many years of research and experience. If you have any production problem that might be solved by the use of wire, it will pay you to

*Get in touch with Page!*

ACCO



Monessen, Pa., Atlanta, Chicago, Denver, Los Angeles, New York, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION  
AMERICAN CHAIN & CABLE

# PRICES

## WAREHOUSE PRICES

Delivered metropolitan areas per 100 lb. These are zoned warehouse prices in conformance with latest zoning amendment to OPA Price Schedule 49.

Cities	SHEETS			STRIP		Plates 1/4 in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot Rolled (10 gage)	Cold Rolled	Galvanized (24 gage)	Hot Rolled	Cold Rolled			Hot Rolled	Cold Finished	Hot Rolled, NE 9442-45 Ann.	Hot Rolled, NE 9442-45 Ann.	Cold Drawn, NE 9442-45 Ann.	Cold Drawn, NE 9442-45 Ann.
Philadelphia	\$3.618	\$4.872*	\$5.168a	\$3.922	\$4.772	\$3.705	\$3.666	\$3.822	\$4.072	\$5.966	\$7.066	\$7.272	\$8.322
New York	3.680	4.613*	5.180	3.974*	4.772	3.888	3.759	3.853	4.103	5.858	6.908	7.103	8.203
Boston	3.844	4.744*	5.374*	4.108	4.715	4.012	3.912	4.044	4.144	6.162	7.262	7.344	8.394
Baltimore	3.494	4.652	5.044	3.902	4.782	3.894	3.799	3.802	4.052	.....	.....	.....	.....
Norfolk	3.871	4.965	5.521	4.185	4.865	4.071	4.002	4.065	4.165	.....	.....	.....	.....
Chicago	3.35	4.20	5.381	3.90	4.651*	3.65	3.55	3.50	3.75	5.75	6.85	6.85	7.90
Milwaukee	3.487	4.337*	5.422*	3.737	4.7871*	3.787	3.687	3.637	3.887	5.987	7.087	7.087	8.137
Cleveland	3.45	4.40	5.027*	3.90	4.45	3.50	3.588	3.35	3.75	5.958	7.058	6.85	7.90
Buffalo	3.45	4.40	4.90*	3.819	4.669	3.73	3.40	3.35	3.75	5.75	6.85	6.85	7.90
Detroit	3.55	4.50	5.15*	3.70	4.6691*	3.709	3.661	3.45	3.80	6.00	7.10	7.159	8.209
Cincinnati	3.525	4.475*	4.975*	3.675	4.711	3.711	3.661	3.611	4.011	.....	.....	.....	.....
St. Louis	3.497	4.347*	5.322*	3.747	4.8311*	3.797	3.697	3.647	4.047	6.131	7.231	7.231	8.281
Pittsburgh	3.45	4.40	4.90	3.60	4.45	3.50	3.40	3.35	3.75	5.75	6.85	6.85	7.90
St. Paul	3.61	4.48	5.407*	3.86	4.361*	3.911*	3.811*	3.761*	4.381	6.09	7.19	7.561	8.711
Omaha	3.965	5.443	5.758*	4.215	4.265	4.165	4.165	4.115	4.41	.....	.....	.....	.....
Indianapolis	3.618	4.568	5.068	3.768	4.741	3.73	3.63	3.58	3.98	6.08	7.18	7.18	8.23
Birmingham	3.55	.....	4.90	3.70	.....	3.65	3.55	3.50	4.43	.....	.....	.....	.....
Memphis	4.065*	4.98	3.415	4.215	.....	4.165	4.065	4.015	4.33	.....	.....	.....	.....
New Orleans	4.158*	4.96	5.508	4.308	.....	4.258	4.158*	4.108*	4.629	.....	.....	.....	.....
Houston	3.863	5.573	6.4631	4.313	.....	4.35	4.25	3.75	6.373*	7.223	8.323	8.323	9.373
Los Angeles	5.10	7.20*	6.25*	4.95	5.8131*	5.05	4.95	4.85	5.553	6.304	8.404	8.404	10.454
San Francisco	4.651*	7.30*	6.50*	4.501*	7.3331*	4.751*	4.651*	4.551*	6.333	8.304	9.404	9.404	10.454
Seattle	4.751*	7.05*	6.10*	4.251*	.....	4.851*	4.751*	4.651*	5.753	.....	.....	.....	.....
Portland	4.751*	6.90*	5.90*	4.751*	.....	4.851*	4.751*	4.651*	5.533	8.304	9.404	8.304	9.494
Salt Lake City	4.631*	.....	6.321*	5.631*	.....	5.051*	4.951*	4.851*	5.90	.....	.....	.....	.....

## National Emergency Steels MILL EXTRAS

Designa- tion	Basic Open-Hearth		Electric Furnace		Designa- tion	Basic Open-Hearth		Electric Furnace	
	Bars and Bar-Strip	Billets, Blooms, and Slabs	Bars and Bar-Strip	Billets, Blooms, and Slabs		Bars and Bar-Strip	Billets, Blooms, and Slabs	Bars and Bar-Strip	Billets, Blooms, and Slabs
NE 9612	0.65¢	\$13.00	\$1.15	\$23.00	NE 9427	0.75¢	\$15.00	\$1.25	\$25.00
NE 9615	0.65	13.00	1.15	23.00	NE 9430	0.75	15.00	1.25	25.00
NE 9617	0.65	13.00	1.15	23.00	NE 9432	0.75	15.00	1.25	25.00
NE 9620	0.65	13.00	1.15	23.00	NE 9435	0.75	15.00	1.25	25.00
NE 9622	0.65	13.00	1.15	23.00	NE 9437	0.75	15.00	1.25	25.00
NE 9625	0.65	13.00	1.15	23.00	NE 9440	0.75	15.00	1.25	25.00
NE 9627	0.65	13.00	1.15	23.00	NE 9442	0.80	16.00	1.30	26.00
NE 9630	0.65	13.00	1.15	23.00	NE 9445	0.80	16.00	1.30	26.00
NE 9632	0.65	13.00	1.15	23.00	NE 9447	0.80	16.00	1.30	26.00
NE 9635	0.65	13.00	1.15	23.00	NE 9450	0.80	16.00	1.30	26.00
NE 9637	0.65	13.00	1.15	23.00					
NE 9640	0.65	13.00	1.15	23.00	NE 9722	0.65	13.00	1.15	23.00
NE 9642	0.65	13.00	1.15	23.00	NE 9727	0.65	13.00	1.15	23.00
NE 9645	0.65	13.00	1.15	23.00	NE 9732	0.65	13.00	1.15	23.00
NE 9647	0.65	13.00	1.15	23.00	NE 9737	0.65	13.00	1.15	23.00
NE 9650	0.65	13.00	1.15	23.00	NE 9742	0.65	13.00	1.15	23.00
					NE 9745	0.65	13.00	1.15	23.00
NE 9712	0.70	14.00	1.20	24.00	NE 9747	0.65	13.00	1.15	23.00
NE 9715	0.70	14.00	1.20	24.00	NE 9750	0.65	13.00	1.15	23.00
NE 9717	0.70	14.00	1.20	24.00	NE 9753	0.65	13.00	1.15	23.00
NE 9720	0.70	14.00	1.20	24.00	NE 9756	0.65	13.00	1.15	23.00
NE 9722	0.70	14.00	1.20	24.00					
NE 9725	0.70	14.00	1.20	24.00	NE 9830	\$1.30	26.00	1.60	36.00
NE 9727	0.70	14.00	1.20	24.00	NE 9832	1.30	26.00	1.60	36.00
NE 9730	0.70	14.00	1.20	24.00	NE 9835	1.30	26.00	1.60	36.00
NE 9732	0.70	14.00	1.20	24.00	NE 9837	1.30	26.00	1.60	36.00
NE 9735	0.70	14.00	1.20	24.00	NE 9840	1.30	26.00	1.60	36.00
NE 9737	0.70	14.00	1.20	24.00	NE 9842	1.30	26.00	1.60	36.00
NE 9740	0.70	14.00	1.20	24.00	NE 9845	1.30	26.00	1.60	36.00
NE 9742	0.70	14.00	1.20	24.00	NE 9847	1.30	26.00	1.60	36.00
NE 9745	0.70	14.00	1.20	24.00	NE 9850	1.30	26.00	1.60	36.00
NE 9747	0.70	14.00	1.20	24.00					
NE 9750	0.70	14.00	1.20	24.00	NE 9912	1.20	24.00	1.55	31.00
					NE 9915	1.20	24.00	1.55	31.00
NE 9415	0.75	15.00	1.25	25.00	NE 9917	1.20	24.00	1.55	31.00
NE 9417	0.75	15.00	1.25	25.00	NE 9920	1.20	24.00	1.55	31.00
NE 9420	0.75	15.00	1.25	25.00	NE 9922	1.20	24.00	1.55	31.00
NE 9422	0.75	15.00	1.25	25.00	NE 9925	1.20	24.00	1.55	31.00
NE 9425	0.75	15.00	1.25	25.00					

Note 1: The ranges shown are restricted to sizes 100 sq. in. or less or equivalent cross-sectional area 18 in. wide or under, with a maximum individual piece weight of 7000 lb. irrespective of size. Note 2: For steels ordered to such ranges, below the size and weight restriction, the average of all the chemical checks must be within the limits specified subject to check analysis variations given in Table 4, Section 10, AISI Steel Products Manual. Note 3: When acid open-hearth is specified and acceptable, add to basic open-hearth alloy differential 0.25c. per lb. for bars and bar strip and \$5 per gross ton for billets, blooms and slabs. Note 4: The extras shown are in addition to the base price of \$2.70 for 100 lb. on finished products and \$54 per gross ton on semi-finished steel, major basing points, and are in cents per pound when applicable to bars and bar-strip and in dollars per gross ton when applicable to billets, blooms and slabs. The full extra applicable over the base price is the total of all extras indicated by the specific requirements of the order. The higher extra shall be charged for any size falling between two published extras.

## BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD ROLLED: Sheets, 400 to 1499 lb.; strip, extras on all quantities; bars, 1500 lb. base; NE alloy bars, 1000 to 39,999 lb.

EXCEPTIONS: (1) 150 to 499 lb. (2) 150 to 1499 lb. (3) 400 to 1499 lb. (4) 450 to 1499 lb. (5) 500 to 1499 lb. (6) 0 to 199 lb. (7) 400 to 1499 lb. (8) 1000 to 1999 lb. (9) 450 to 3749 lb. (10) 400 to 3999 lb. (11) 300 to 4999 lb. (12) 800 to 10,000 lb. (13) 300 to 14,999 lb. (14) 400 lb. and over. (15) 1000 lb. and over. (16) 1500 lb. and over. (17) 2000 lb. and over. (18) \$500 lb. and over.

(\*) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quantities.

\*Add 0.271c. for sizes not rolled in Birmingham.

\*\*City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

## LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports\*)

Per Gross Ton

Old range, bessemer, 51.50 ..... \$4.75

Old range, non-bessemer, 51.50 ..... 4.60

Mesaba, bessemer, 51.50 ..... 4.60

Mesaba, non-bessemer, 51.50 ..... 4.45

High phosphorus, 51.50 ..... 4.35

\*Adjustments are made to indicate prices based on variance of Fe content of ores as analyzed on a dry basis by independent laboratories.

## FLUORSAPAR

Maximum price f.o.b. consumer's plant, \$30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

### Exception

When the WPB Steel Division certifies in writing the consumer's need for one of the higher grades of metallurgical fluorspar specified in the table below the price shall be taken from the table plus items (1 and 2) from paragraph above.

Effective CaF <sub>2</sub> Content:	Base price per short ton
70% or more	\$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00



## PRICES

### SEMI-FINISHED STEEL

#### Ingots, Carbon, Re-rolling

Base per gross ton, f.o.b. mill.... \$31.00  
 Exceptions: Phoenix Iron Co. may charge \$38.75; Kaiser Co., \$43.00 f.o.b. Pacific Coast ports; Empire Sheet & Tinplate Co., \$34.25; Pgh. Steel Co., \$33.10.

#### Ingots, Carbon, Forging

Base per gross ton, f.o.b. Birmingham, Buffalo, Chicago, Cleveland, Gary, Pittsburgh, Youngstown... \$36.00  
 Exceptions: Phoenix Iron Co. may charge \$43.00; Empire Sheet & Tinplate Co., \$39.25, f.o.b. Mansfield, Ohio; West Coast producers, \$48.00, f.o.b. Pacific Coast Ports; Pgh. Steel Co., \$38.10.

#### Ingots, Alloy

Base per gross ton, f.o.b. Bethlehem, Buffalo, Canton, Coatesville, Chicago, Massillon, Pittsburgh... \$45.00  
 Exceptions: C/L delivered Detroit add \$2.00; delivered East Michigan add \$3.00. Connors Steel Co. may charge \$45.00 f.o.b. Birmingham.

#### Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (re-rolling only). Prices delivered Detroit are \$2.00 higher; delivered E. Michigan, \$3 higher; f.o.b. Duluth, billets only, \$2.00 higher; billets f.o.b. Pacific ports are \$12 higher. Provo, \$11.20 higher. Delivered prices do not reflect three per cent tax on freight rates.

Per Gross Ton  
 Re-rolling ..... \$34.00  
 Forging quality ..... 40.00  
 For exceptions on semi-finished steel see the footnote on the page of finished steel prices.

#### Alloy Billets, Blooms, Slabs

Pittsburgh, Chicago, Canton, Massillon, Buffalo or Bethlehem, per gross ton ..... \$54.00  
 Price delivered Detroit \$2.00 higher; East Michigan, \$3.00 higher.

#### Shell Steel

Per Gross Ton  
 3 in. to 12 in. .... \$52.00  
 12 in. to 18 in. .... 54.00  
 18 in. and over ..... 56.00  
 Basic open hearth shell steel, f.o.b. Pittsburgh, Chicago, Buffalo, Gary, Cleveland, Youngstown and Birmingham.  
 Prices delivered Detroit are \$2.00 higher; East Michigan, \$3 higher.  
 Price Exceptions: Follansbee Steel Corp. permitted to sell at \$13.00 per gross ton, f.o.b. Toronto, Ohio, above base price of \$52.00.

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting, or quantity.

#### Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point.  
 Per Gross Ton  
 Open hearth or bessemer ..... \$34.00

#### Skelp

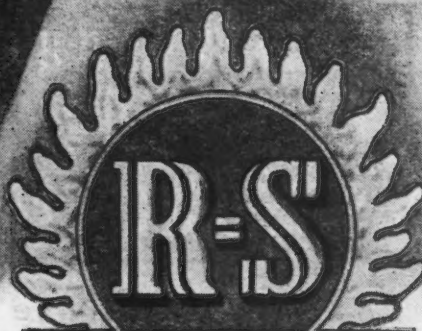
Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.  
 Per Lb.  
 Grooved, universal and sheared .. 1.90c.

#### Wire Rods

(No. 5 to 9/32 in.)  
 Per Lb.  
 Pittsburgh, Chicago, Cleveland ... 2.00c.  
 Worcester, Mass. .... 2.10c.  
 Birmingham .... 2.00c.  
 San Francisco .... 2.50c.  
 Galveston .... 2.25c.  
 9/32 in. to 47/64 in., 0.15c. a lb. higher. Quantity extras apply.

### TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse)  
 Base per lb.  
 High speed ..... 67c.  
 Straight molybdenum ..... 54c.  
 Tungsten-molybdenum ..... 57 1/2c.  
 High-carbon-chromium ..... 43c.  
 Oil hardening ..... 24c.  
 Special carbon ..... 22c.  
 Extra carbon ..... 18c.  
 Regular carbon ..... 14c.  
 Warehouse prices east of Mississippi are 2c. a lb. higher; west of Mississippi 3c. higher.



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This R-S name plate on an industrial heat-treating furnace is more than a means of identification—it is the stamp of approval of R-S engineers.

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 Cleveland 14, Ohio  
 Phone—Prospect 1940

Haylett O'Neill  
 P. O. Box 1662  
 Houston, Texas  
 Phone—Hadley 9704

A. Perry Roberts  
 Woolworth Bldg.  
 New York 7, N. Y.  
 Phone—Barclay 7-1245

Harry M. Wood  
 800 Times-Star Tower  
 Cincinnati 2, Ohio  
 Phone—Cherry 2421

S. P. Kinney  
 233 Oliver Avenue  
 Pittsburgh, Pa.  
 Phone—Atlantic 1790

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 Chicago 4, Illinois  
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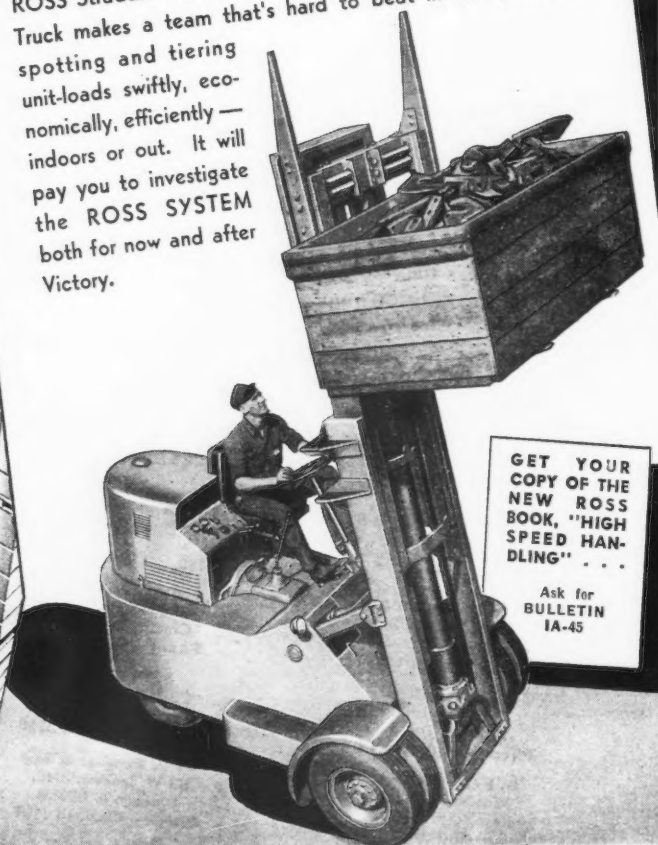
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# ROSS

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MATERIALS-HANDLING

EQUIPMENT

BENTON HARBOR • MICHIGAN

## PRICES

### WELDED PIPE AND TUBING

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills  
(F.o.b. Pittsburgh only on wrought pipe)  
Base Price—\$200.00 per Net Ton

#### Steel (Butt Weld)

	Black	Galv.
½ in. ....	63½	51
¾ in. ....	66½	55
1 to 3 in. ....	68½	57½

#### Wrought Iron (Butt Weld)

		3½
½ in. ....	24	
¾ in. ....	30	10
1 and 1½ in. ....	34	16
1½ in. ....	38	18½
2 in. ....	37½	18

#### Steel (Lap Weld)

		49½
2 in. ....	61	
2½ in. and 3 in. ....	64	52½
3½ to 6 in. ....	66	54½

#### Wrought Iron (Lap Weld)

		13
2 in. ....	30½	
2½ to 3½ in. ....	31½	14½
4 in. ....	33½	18
4½ to 8 in. ....	32½	17

#### Steel (Butt, extra strong, plain ends)

		50½
½ in. ....	61½	
¾ in. ....	65½	54½
1 to 3 in. ....	67	57

#### Wrought Iron (Same as Above)

		12
½ in. ....	25	
¾ in. ....	31	12
1 to 2 in. ....	38	19½

#### Steel (Lap, extra strong, plain ends)

		48½
2 in. ....	59	
2½ and 3 in. ....	63	52½
3½ to 6 in. ....	66½	56

#### Wrought Iron (Same as Above)

		15½
2 in. ....	33½	
2½ to 4 in. ....	39	22½
4½ to 6 in. ....	37½	21

On butt weld and lap weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card. F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher on all butt weld.

### CAST IRON WATER PIPE

	Per Net Ton
6-in. and larger, del'd Chicago....	\$54.80
6-in. and larger, del'd New York..	52.20
6 in. and larger, Birmingham ....	46.00
6-in. and larger f.o.b. cars, San Francisco or Los Angeles .....	69.40
6-in. and larger f.o.b. cars, Seattle.	71.20
Class "A" and gas pipe, \$3 extra; 4-in. pipe is \$3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons or over, 6-in. and larger are \$45 at Birmingham and \$53.80 delivered Chicago, \$59.40 at San Francisco and Los Angeles, and \$70.20 at Seattle. Delivered prices do not reflect new 3 per cent tax on freight rates.	

### BOILER TUBES

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes, Minimum Wall. Net base prices per 100 ft. f.o.b. Pittsburgh, in carload lots.

	Seamless	Lap Weld,
	Cold	Hot
	Drawn	Roller
2 in. o.d. 13 B.W.G. 15.03	13.04	12.38
2½ in. o.d. 12 B.W.G. 30.21	17.54	16.58
3 in. o.d. 12 B.W.G. 22.48	19.50	18.35
3½ in. o.d. 11 B.W.G. 23.37	24.63	23.15
4 in. o.d. 10 B.W.G. 35.20	30.54	28.66
(Extras for less carload quantities)		
40,000 lb. or ft. and over .....	Base	
30,000 lb. or ft. to 39,999 lb. or ft.	5%	
20,000 lb. or ft. to 29,999 lb. or ft.	10%	
10,000 lb. or ft. to 19,999 lb. or ft.	20%	
5,000 lb. or ft. to 9,999 lb. or ft.	30%	
2,000 lb. or ft. to 4,999 lb. or ft.	45%	
Under 2,000 lb. or ft. ....	65%	



## PRICES

### WIRE PRODUCTS

To the trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points Named	Pacific Coast Basing Points
	Base per keg	
Standard wire nails...	\$2.80	\$3.30
Coated nails .....	2.80	3.30
Cut nails, carloads....	3.85	....
	Base per 100 lb.	
Annealed fence wire...	\$3.05	\$3.55
Annealed galv. fence wire	3.40	3.90
	Base Column	
Woven wire fence*....	.67	.35
Fence posts, carloads..	.69	.86
Single loop bale ties..	.59	.84
Galvanized barbed wire**	.70	.80
Twisted barbless wire..	.70	....

\*15½ gage and heavier. \*\*On 80-rod spools in carload quantities.  
†Prices subject to switching or transportation charges.

### BOLTS, NUTS, RIVETS, SET SCREWS

#### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

#### Machine and Carriage Bolts:

Base discount less case lots

Per Cent Off List

3/16 & ½ in. x 6 in. & shorter.....	63½
½ in. & smaller x 6 in. & shorter....	65½
¾ to 1 in. x 6 in. shorter.....	61
1½ in. and larger, all lengths.....	59
All diameters over 6 in. long.....	59
Lag, all sizes .....	62
Plow bolts .....	65

#### Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller.....	62
9/16 to 1 in. inclusive.....	59
1½ to 1½ in. inclusive.....	57
1½ in. and larger.....	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 per cent for full container quantities. There is an additional 5 per cent allowance for carload shipments.

#### Semi-Fin. Hexagon Nuts U.S.S. S.A.E.

Base discount less keg lots

7/16 in. and smaller.....	64
½ in. and smaller.....	62
¾ in. through 1 in. ....	60
9/16 in. through 1 in. ....	59
1½ in. through 1½ in. ....	57
1½ in. and larger.....	56

In full keg lots, 10 per cent additional discount.

#### Stove Bolts

Consumer

Packages, nuts loose.....	71 and 10
In packages, with nuts attached....	71
In bulk .....	80

On stove bolts freight allowed up to 35c. per 100 lb. based on Cleveland, Chicago, New York on lots of 200 lb. or over.

#### Large Rivets

(½ in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham .....	\$3.75
---	--------

#### Small Rivets

(7/16 in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham .....	65 and 5
---	----------

#### Cap and Set Screws

Consumer

Per Cent Off List

Upset full fin. hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.....	64
Upset set screws, cup and oval points	71
Milled studs .....	46
Flat head cap screws, listed sizes....	36
Fillister head cap, listed sizes.....	51

Freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago or New York on lots of 200 lb. or over.

### ROOFING TERNE PLATE

(F.o.b. Pittsburgh, 112 Sheets)

20x14 in. 20x28 in.

3-lb. coating I.C.....	\$6.00	\$12.00
15-lb. coating I.C.....	7.00	14.00
20-lb. coating I.C.....	7.50	15.00

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**SPEED**  
PRODUCTION

## RUTHMAN GUSHER COOLANT PUMPS



**Model  
11020-A**

Your need for high-speed production was uppermost in the minds of the designers of Ruthman Gusher Coolant Pumps. Sturdy construction . . . split-second control of coolants . . . high flushing capacity . . . simple, ball bearing design . . . no metal-to-metal contact means trouble-free operation and high-speed production on your machines.

With a Ruthman Gusher Coolant Pump you are assured of low maintenance cost and steady round-the-clock operation which will help you to meet your production schedules quickly, easily.

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THE "GUSHER"

A MODERN PUMP FOR MODERN MACHINE TOOLS



# PIG IRON PRICES

BASING POINT* BASE PRICES						DELIVERED PRICES† (BASE GRADES)							
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	\$25.50	\$26.00	\$26.50	\$27.00		Boston	Everett	\$ .50	\$26.00	\$26.50	\$27.00	\$27.50	
Birdsboro	25.50	26.00	26.50	27.00	\$30.50	Boston	Birdsboro-Steelton	4.02					\$34.52
Birmingham	20.00	21.38		26.00		Brooklyn	Bethlehem	2.50	28.00	28.50	29.00	29.50	
Buffalo	24.00	25.00	25.50	26.00	30.50	Brooklyn	Birdsboro	2.92					33.42
Chicago	24.50	25.00	25.00	25.50		Canton	Cleveland	1.39	28.89	28.39	28.39	28.89	
Cleveland	24.50	25.00	25.00	25.50		Canton	Buffalo	3.19					33.69
Detroit	24.50	25.00	25.00	25.50		Cincinnati	Birmingham	4.06	24.08	25.44			
Duluth	25.00	25.50	25.50	26.00		Cincinnati	Hamilton	1.11			26.11		
Erie	24.50	25.00	25.50	26.00		Cincinnati	Buffalo	4.40					34.90
Everett	25.50	26.00	26.50	27.00		Jersey City	Bethlehem	1.53	27.03	27.53	28.03	28.53	
Granite City	24.50	25.00	25.00	25.50		Jersey City	Birdsboro	1.94					32.44
Hamilton	24.50	25.00	25.00			Los Angeles	Provo	4.95	27.45	27.95			
Neville Island	24.50	25.00	25.00	25.50		Los Angeles	Buffalo	15.41					45.91
Provo	22.50	23.00				Mansfield	Cleveland & Toledo	1.94	26.44	26.94	26.94	27.44	
Sharpsville	24.50	25.00	25.00	25.50		Mansfield	Buffalo	3.36					33.86
Sparrows Point	25.50	26.00				Philadelphia	Swedeland	.84	26.34	26.84	27.34	27.84	
Steelton	25.50				30.50	Philadelphia	Birdsboro	1.24					31.74
Swedeland	25.50	26.00	26.50	27.00		San Francisco	Provo	4.95	27.45	27.95			45.91
Toledo	24.50	25.00	25.00	25.50		Seattle	Buffalo	15.41					45.91
Youngstown	24.50	25.00	25.00	25.50		Seattle	Provo	4.95	27.45	27.95			45.91
						St. Louis	Buffalo	15.41	.50	25.00	25.50	26.00	37.57
						St. Louis	Granite City						
						St. Louis	Buffalo	7.07					

\* Maximum per gross ton, established by OPA February 14, 1945.

† Prices do not reflect 3 per cent tax on freight.

\* Maximum per gross ton, established by OPA February 14, 1945.

† Prices do not reflect 3 per cent tax on freight.

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50c. a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, \$33.00 and \$34.00, respectively. Newberry Brand of Lake Superior charcoal iron \$39.00 per g.t., f.o.b. furnace, by order L 39 to RPS 10, April 11, 1945, retroactive to March 7, 1945. Delivered to Chicago, \$42.34. High phosphorus iron sells at Lyles, Tenn., at \$28.50.

Basing point prices are subject to switching charges; Silicon differentials (not to exceed 50c. a ton for each 0.25 per cent silicon content in excess of base grade which is 1.75 to 2.25 per cent); Phosphorus differentials, a reduction of 38c. per ton for phosphorus content of 0.70 per cent and over; Manganese differentials, a charge not to exceed 50c. per ton for each 0.50 per cent manganese content in excess of 1.00 per cent. Effective March 3, 1943, \$2 per ton extra may be charged for 0.5 to 0.75 per cent nickel content and \$1 per ton extra for each additional 0.25 per cent nickel.

Silvery iron and bessemer ferrosilicon up to and including 14.00 per cent silicon covered by RPS 10 as amended Feb. 14, 1945. Silvery iron, silicon 6.00 to 6.50 per cent, C/L per g.t., f.o.b. Jackson, Ohio—\$30.50; f.o.b. Buffalo—\$31.75. Add \$1.00 per ton for each additional 0.50% Si. Add 50c. per ton for each 0.50% Mn over 1.00%. Add \$1.00 per ton for 0.75% or more P. Bessemer ferrosilicon prices are \$1.00 per ton above silvery iron prices of comparable analysis.

## METAL POWDERS

Prices are based on current market prices of ingots plus a fixed figure. F.o.b. shipping point, c. per lb., ton lots.

Copper, electrolytic, 150 and 200 mesh	21 1/4 to 23 1/2
Copper, reduced, 150 and 200 mesh	20 1/4 to 25 1/2
Iron, commercial, 100 and 200 mesh 96 + % Fe	12 1/4 to 15c
Iron, crushed, 300 mesh and finer, 90 + % Fe, carload lots	4c
Iron, hydrogen reduced, 300 mesh and finer, 98 1/2 + % Fe, drum lots	63c
Iron, electrolytic, unannealed, 300 mesh and coarser, 99 + % Fe 30 to 33c	
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe	42c
Iron, carbonyl, 300 mesh and finer, 98-99.8 + % Fe	90c
Aluminum, 100 and 200 mesh	*23 to 27c
Antimony, 100 mesh	20.6c
Cadmium, 100 mesh	11c
Chromium, 150 mesh	11.03
Lead, 100, 200 & 300 mesh	11 1/4 to 12 1/4c
Manganese, 150 mesh	51c
Nickel, 150 mesh	51 1/4c
Solder powder, 100 mesh, 8 1/2c plus metal	58c
Tin, 100 mesh	58c
Tungsten metal powder, 98%-99%, any quantity, per lb.	\$2.60
Molybdenum powder, 99%, in 200-lb. kegs, f.o.b. York, Pa., per lb.	\$2.60
Under 100 lb.	\$3.00

\*Freight allowed east of Mississippi.

## COKE

Furnace, beehive (f.o.b. oven)	Net Ton
Connellsville, Pa.	\$7.00*
Foundry, beehive (f.o.b. oven)	
Fayette Co., W. Va.	8.10
Connellsville, Pa.	8.25
Foundry, By-Product	
Chicago, del'd	13.35
Chicago, f.o.b.	12.60
New England, del'd	14.25
Kearny, N. J., f.o.b.	12.65
Philadelphia, del'd	12.88
Buffalo, del'd	13.00
Portsmouth, Ohio, f.o.b.	11.10
Palmsville, Ohio, f.o.b.	11.75
Erie, del'd	12.75
Cleveland, del'd	12.30
Cincinnati, del'd	12.35
St. Louis, del'd	12.85
Birmingham, del'd	10.50

\*Hand drawn ovens using trucked coal permitted to charge \$7.75 per ton plus transportation charges.

**You Can Depend On**  
**HERCULES (RED STRAND) WIRE ROPE**  
**For Low Operating Cost**

Round Strand  
 Flattened Strand  
 Standard & Preformed

WHY not let "HERCULES" (Red-Strand) Wire Rope help you meet present day production requirements and still maintain a reasonable margin of profit? You will quickly discover that "HERCULES" is a dependable ally—not only in today's fight against increasing operating costs—but also in your endeavor to speed up production.

Made Only By **A. LESCHEN & SONS ROPE CO.** Established 1857

5909 Kennerly Avenue, St. Louis 12, Mo.

New York • Chicago • Denver • San Francisco • Seattle • Portland

## PRICES

### REFRACTORIES

(F.o.b. Works)

#### Fire Clay Brick

Per 1000

Super-duty brick, St. Louis	\$66.55
First quality, Pa., Md., Ky., Mo., Ill.	52.85
First quality, New Jersey	57.70
Sec. quality, Pa., Md., Ky., Mo., Ill.	47.95
Sec. quality, New Jersey	52.55
No. 1 Ohio	44.30
Ground fire clay, net ton	7.80

#### Silica Brick

Pennsylvania and Birmingham	\$52.85
Chicago District	60.65
Silica cement, net ton (Eastern)	9.25

#### Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Plymouth Meeting, Chester	\$54.00
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#### Magnesite Brick

Standard, Balt. and Chester	\$76.00
Chemically bonded, Baltimore	65.00

#### Grain Magnesite

Domestic, f.o.b. Balt. and Chester in sacks (carloads)	\$43.48
Domestic, f.o.b. Chewelah, Wash. (in bulk)	22.00

### RAILS, TRACK SUPPLIES

(F.o.b. Mill)

Standard rails, heavier than 60 lb., No. 1 O.H., gross ton	\$43.00
Angle splice bars, 100 lb.	2.70
(F.o.b. Basing Points) Per Gross Ton	
Light rails (from billets)	\$43.00
Light rails (from rail steel)	39.00
Base per Lb.	
Cut spikes	3.00c.
Screw spikes	5.15c.
Tie plate, steel	2.15c.
Tie plates, Pacific Coast	2.30c.
Track bolts	4.75c.
Track bolts, heat treated, to railroads	5.00c.
Track bolts, jobbers discount	63-5
Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo, Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25c.	

### CORROSION AND HEAT-RESISTING STEEL

(Per lb. base price, f.o.b. Pittsburgh)

#### Chromium-Nickel Alloys

	No. 304	No. 302
Forging billets	21.25c.	20.40c.
Bars	25.00c.	24.00c.
Plates	29.00c.	27.00c.
Structural shapes	25.00c.	24.00c.
Sheets	34.00c.	34.00c.
Hot rolled strip	23.50c.	21.50c.
Cold rolled strip	30.00c.	28.00c.
Drawn wire	25.00c.	24.00c.

#### Straight-Chromium Alloys

	No. 410	No. 430	No. 442	No. 446
F.Billets	15.725c.	16.15c.	19.125c.	23.375c.
Bars	18.50c.	19.00c.	22.50c.	27.50c.
Plates	21.50c.	22.00c.	25.50c.	30.50c.
Sheets	26.50c.	29.00c.	32.50c.	36.50c.
Hot strip	17.00c.	17.50c.	24.00c.	35.00c.
Cold strip	22.00c.	22.50c.	32.00c.	52.00c.

#### Chromium-Nickel Clad Steel (20%)

	No. 304
Plates	18.00c.*
Sheets	19.00c.

\*Includes annealing and pickling.

### ELECTRICAL SHEETS

(Base, f.o.b. Pittsburgh)

Per Lb.

Field grade	3.20c.
Armature	3.55c.
Electrical	4.05c.
Motor	4.95c.
Dynamo	5.65c.
Transformer 72	6.15c.
Transformer 65	7.15c.
Transformer 58	7.65c.
Transformer 52	8.45c.
F.o.b. Granite City, add 10c. per 100 lb. on field grade to and including dynamo, Pacific ports add 75c. per 100 lb. on all grades.	



Conveyors handle a wide variety of commodities—parts, packages, units, cartons, cans, bottles, barrels, bundles, drums, boxes. Available in light, average, or heavy-duty types for portable or stationary use, in a wide variety of sizes, styles, and lengths . . . all built by Standard. They give you substantial savings in time and money. Engineers say that material handling constitutes about 22% of manpower cost . . . cut handling

costs and you cut production costs.

Standard Conveyor Company has the experience and facilities to recommend and furnish the right type of conveyor for your particular needs. Write for catalog IA-55 "Conveyors by Standard"—a reference book that will prove very useful to you.

### STANDARD CONVEYOR CO.

General Offices: North St. Paul 9, Minn.

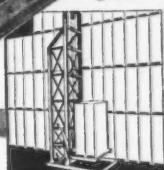
Sales and Service In Principal Cities



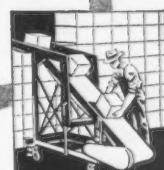
Pneumatic Tube Systems



Spiral Chutes



Tiering and Lifting Machines



Portable Pilers

# MACHINED BRONZE BEARINGS GRAPHITED AND OILLESS BRONZE BEARINGS BRONZE GEAR BLANKS MACHINED BRONZE PARTS

S & H Bronze Bearings are made of cast bronze, under the most modern conditions and of specifications to meet the most exacting requirements. We are manufacturers of plain bronze and graphited and oilless bronze bearings for all branches of the Government Services, as well as plain cylinder type, single and double flange, thrust washers, from  $\frac{3}{8}$ " in diameter to 20" in diameter. We also manufacture special parts made of cast bronze. Our manufacturing methods and equipment enable us to meet the most exacting machining specifications.

*If it's Bronze*

**INDUSTRIAL**



*We make it*

**BEARINGS**

**S. & H. Bearing and Manufacturing Co.**

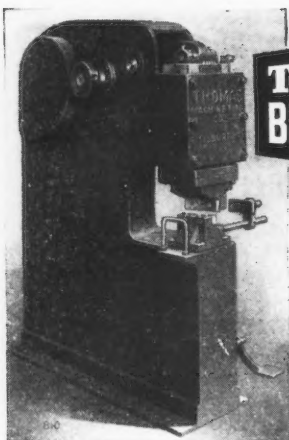
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**New Jersey**

## SPECIAL MACHINERY BUILT ON CONTRACT

BENDING AND STRAIGHTENING MACHINES



**THOMAS  
BAR SHEARS**

PUNCHING AND SHEARING MACHINERY

An indispensable machine in steel mills and machine shops for bar shearing operations. Of steel plate construction, and available in a number of sizes up to 3" diameter rounds.

Write for Bulletin 317, illustrating  
and describing machine in detail.

**THOMAS**  
MACHINE MANUFACTURING COMPANY

**PITTSBURGH, PA.**

## PRICES

### Ferromanganese

78-82% Mn, maximum contract base price per gross ton, lump size, f.o.b. car at Baltimore, Bethlehem, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.  
Carload lots (bulk) ..... \$135.00  
Carload lots (packed) ..... 141.00  
Less ton lots (packed) ..... 148.50  
\$1.70 for each 1% above 82% Mn; penalty, \$1.70 for each 1% below 78%.

### Manganese Metal

Contract basis, lump size, per lb. of metal, f.o.b. shipping point with freight allowed. Spot sales add 2c. per lb.  
96-98% Mn, 2% max. C, 1% max. Si, 2% max. Fe.  
Carload, bulk ..... 36c.  
L.c.l. lots ..... 38c.  
95-97% Mn, 2% max. C, 1.5% max. Si, 2.5% max. Fe.  
Carload, bulk ..... 34c.  
L.c.l. lots ..... 35c.

### Spiegeleisen

Maximum base, contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.  
16-19% Mn 19-21% Mn  
3% max. Si 3% max. Si  
Carloads ..... \$35.00 \$36.00  
Less ton ..... 47.50 48.50

### Electric Ferro-silicon

OPA maximum base price cents per lb. contained Si, lump size in carloads, f.o.b. shipping point with freight allowed.  
Eastern Zone Central Zone Western Zone  
50% Si ... 6.65c. 7.10c. 7.25c.  
75% Si ... 8.05c. 8.20c. 8.75c.  
80-90% Si, 8.90c. 9.05c. 9.55c.  
90-95% Si, 11.05c. 11.20c. 11.65c.  
Spot sales add: 45c. per lb. for 50% Si, 3c. per lb. for 75% Si, 25c. per lb. for 80-90% and 90-95% Si.

### Silvery Iron

Silvery Iron, Silicon 14.01 to 14.50 per cent, \$45.50 per G. T. f.o.b. Jackson, Ohio. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%. Covered by MPR 405.

### Silicon Metal

OPA maximum base price per lb. of contained Si, lump size, f.o.b. shipping point with freight allowed to destination, for l.c.l. above 2000 lb., packed. Add .25c. for spot sales.

	Eastern Zone	Central Zone	Western Zone
96% Si, 2% Fe..	13.10c.	13.55c.	16.50c.
97% Si, 1% Fe..	13.45c.	13.90c.	16.80c.

### Ferrosilicon Briquets

OPA maximum base price per lb. of briquet, bulk, f.o.b. shipping point with freight allowed to destination. Approximately 40% Si. Add .25c. for spot sales.

	Eastern Zone	Central Zone	Western Zone
Carload, bulk, 3.35c.	3.50c.	3.65c.	
2000 lb.-carload 3.8c.	4.2c.	4.25c.	

### Silicomanganese

Contract basis lump size, per lb. of metal, f.o.b. shipping point with freight allowed. Add .25c. for spot sales. 65-70% Mn, 17-20% Si, 1.5% max. C.  
Carload, bulk ..... 6.05c.  
2000 lb. to carload ..... 6.70c.  
Under 2000 lb. .... 6.90c.  
Briquets, contract, basis carlots, bulk freight allowed, per lb. .... 5.80c.  
2000 lb. to carload ..... 6.30c.  
Less ton lots ..... 6.55c.

### Ferrochrome

(65-72% Cr, 2% max. Si)

OPA maximum base contract prices per lb. of contained Cr, lump size in carload lots, f.o.b. shipping point, freight allowed to destination. Add .25c. per lb. contained Cr for spot sales.

	Eastern Zone	Central Zone	Western Zone
0.06% C ..... 23.00c.	23.40c.	24.00c.	
0.10% C ..... 22.50c.	22.90c.	23.50c.	
0.15% C ..... 22.00c.	22.40c.	23.00c.	
0.20% C ..... 21.50c.	21.90c.	22.50c.	
0.50% C ..... 21.00c.	21.40c.	22.00c.	
1.00% C ..... 20.50c.	20.90c.	21.50c.	
2.00% C ..... 19.50c.	19.90c.	21.00c.	
66-71% Cr, 4-10% ..... 13.00c.	13.40c.	14.00c.	
62-66% Cr, 5-7% C ..... 13.50c.	13.90c.	14.50c.	



# FERROALLOY PRICES

## High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2c. per lb. to regular low-carbon ferrochrome price schedule. Add 2c. for each additional 0.25% N. High-carbon type: 66-71% Cr, 4-5% C, 0.75% N. Add 5c. per lb. to regular high-carbon ferrochrome price schedule.

## Low-Carbon Ferromanganese

Contract prices per lb. of manganese contained, lump size, f.o.b. shipping point, freight allowed to destination, Eastern Zone. Add 0.25c. for spot sales.

	Carloads, Ton	Less Ton
0.10% max. C, 1	23.00c.	23.40c.
or 2% max. Si, 1	23.00c.	23.40c.
0.15% max. C, 1	22.00c.	22.40c.
or 2% max. Si, 1	22.00c.	22.40c.
0.30% max. C, 1	21.00c.	21.40c.
or 2% max. Si, 1	21.00c.	21.40c.
0.50% max. C, 1	20.00c.	20.40c.
or 2% max. Si, 1	20.00c.	20.40c.
0.75% max. C, 1	16.00c.	16.40c.
7.00% max. Si, 1	16.00c.	16.40c.

## Ferrochrome Briquets

Contract prices per lb. of briquet, f.o.b. shipping point, freight allowed to destination. Approx. 60 per cent contained chromium. Add 0.25c. for spot sales.

	Eastern Zone	Central Zone	Western Zone
Carload, bulk, 1	8.25c.	8.55c.	8.95c.
Ton lots, 1	8.75c.	9.25c.	10.75c.
Less ton lots, 1	9.00c.	9.50c.	11.00c.

## Ferromanganese Briquets

Contract prices per lb. of briquet, f.o.b. shipping point, freight allowed to destination. Approx. 66 per cent contained manganese. Add 0.25c. for spot sales.

	Eastern Zone	Central Zone	Western Zone
Carload, bulk, 1	6.05c.	6.30c.	6.60c.
Ton lots, 1	6.65c.	7.55c.	8.55c.
Less ton lots, 1	6.80c.	7.80c.	8.80c.

## Calcium—Manganese—Silicon

Contract prices per lb. of alloy, lump size, f.o.b. shipping point, freight allowed to destination. 16-20% Ca, 14-18% Mn, 53-59% Si. Add 0.25c. for spot sales.

	Eastern Zone	Central Zone	Western Zone
Carloads, 1	15.50c.	16.00c.	18.05c.
Ton lots, 1	16.50c.	17.35c.	19.10c.
Less ton lots, 1	17.00c.	17.35c.	19.60c.

## Calcium Metal

Eastern zone contract prices per lb. of metal, f.o.b. shipping point, freight allowed to destination. Add 5c. for spot sales. Add 0.9c. for Central Zone; 0.49c. for Western Zone.

	Cast	Turnings	Distilled
Ton lots, 1	\$1.80	\$2.30	\$5.00
Less ton lots, 1	2.30	2.80	5.75

## Chromium—Copper

Contract price per lb. of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi River. 8-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si. Add 2c. for spot sales. Shot or ingot 45c.

## Ferroboration

Contract prices per lb. of alloy, f.o.b. shipping point, freight allowed to destination. Add 5c. for spot sales. 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.

	Eastern Zone	Central Zone	Western Zone
Ton lots, 1	\$1.20	\$1.2075	\$1.229
Less ton lots, 1	1.30	1.3075	1.329

## Manganese—Boron

Contract prices per lb. of alloy, f.o.b. shipping point, freight charges allowed. Add 5c. for spot sales. 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.

	Eastern Zone	Central Zone	Western Zone
Ton lots, 1	\$1.89	\$1.903	\$1.935
Less ton lots, 1	2.01	2.023	2.055

## Nickel—Boron

Spot and contract prices per lb. of alloy, f.o.b. shipping point, freight allowed to destination. 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

	Eastern Zone	Central Zone	Western Zone
11,200 lb. or more, 1	\$1.90	\$1.9125	\$1.9445
Ton lots, 1	2.00	2.09125	2.0445
Less ton lots, 1	2.10	2.1125	2.1445

## Other Ferroalloys

Ferrotungsten, Standard grade lump or 1/4X down, packed, f.o.b. plant at Niagara Falls, New York, Washington, Pa. York, Pa., per lb. contained tungsten, 10,000 lb. or more.... \$1.90

Ferrovandium, 35-55% contract basis, f.o.b. producer's plant, usual freight allowances, per lb. contained Va. Open hearth 22.70 Crucible 22.80 Primos 22.90

Cobalt, 97% min., keg packed, contract basis, f.o.b. producer's plant, usual freight allowances, per lb. of cobalt metal.... \$1.50

Vanadium pentoxide, 88-92% V<sub>2</sub>O<sub>5</sub> technical grade, contract basis, any quantity, per lb. contained V<sub>2</sub>O<sub>5</sub>. Spot sales add 5c. per lb. contained V<sub>2</sub>O<sub>5</sub>.... \$1.10

Silicaz No. 3, contract basis, f.o.b. producer's plant with usual freight allowances, per lb. of alloy. (Pending OPA approval) Carload lots 25c. 2000 lb. to carload.... 26c.

Silvaz No. 3, contract basis, f.o.b. producer's plant with freight allowances, per lb. of alloy (Pending OPA approval) Carload lots 58c. 2000 lb. to carload.... 59c.

Grainal, f.o.b. Bridgeville, Pa., freight allowed 50 lb. and over, max. based on rate to St. Louis No. 1 87.5c. No. 6 60c. No. 79 45c.

Bortram, f.o.b. Niagara Falls Ton lots, per lb. 45c. Less ton lots, per lb. 50c.

Ferrocolumbium, 50-60% contract basis, f.o.b. plant with freight allowances, per lb. contained Cb. 2000 lb. lots 22.25 Under 2000 lb. lots.... 23.30

Ferrotitanium, 40-45%, 0.10% C. max. f.o.b. Niagara Falls, N. Y., ton lots, per lb. contained Ti. 1.23 Less ton lots.... 1.25

Ferrotitanium, 20-25%, 0.10% C. max., ton lots, per lb. contained titanium 1.35 Less ton lots.... 1.40

High-carbon ferrotitanium, 15-20%, 6-8% carbon, contract basis, f.o.b. Niagara Falls, N. Y. freight allowed East of Mississippi River, north of Baltimore and St. Louis, per carload.... \$142.50

Ferrophosphorus, 18% electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with \$3 unitage freight equalized with Rockdale, Tenn., per gross ton.... 58.50

Ferrophosphorus, electrolytic 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., \$3 unitage freight equalized with Nashville, per gross ton 75.00

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., any quantity, per lb. contained Mo. 95c.

Calcium molybdate, 40-45%, f.o.b. Langeloth and Washington, Pa., any quantity, per lb. contained Mo. 80c.

Molybdenum oxide briquets, 48-52% Mo. f.o.b. Langeloth, Pa. per lb. contained Mo. 80c.

Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa. per lb. contained Mo. 80c.

Zirconium, 35-40% contract basis, f.o.b. producer's plant with freight allowances, per lb. of alloy. Add 1/4c. for spot sales Carload lots 14c.

Zirconium, 12-15% contract basis, lump f.o.b. plant usual freight allowances, per lb. of alloy Carload, bulk 4.6c.

Alsifer (approx. 20% Al, 40% Si and 40% Fe), contract basis, f.o.b. Niagara Falls, carload, bulk 5.75c. Ton lots 7.25c.

Simanal (approx. 20% Si, 20% Mn, 20% Al), contract basis, f.o.b. Philo, Ohio, with freight not to exceed St. Louis rate allowed, per lb. Car lots 8.00c. Ton lots 8.75c. Less ton lots 9.25c.

CLEAN STRIP STEEL  
BEFORE ANNEALING  
AND ELECTRO-TINNING

by using

**FAST**

**OAKITE  
COMPOSITION  
No. 90**

When strip steel speeds along at a thousand or more feet per minute through the large installations necessary for annealing or electro-tinning this metal, unusually FAST, THOROUGH degreasing is a prime requisite. That's why we say... to obtain the essential, CHEMICALLY-CLEAN surfaces, use quick-acting Oakite Composition No. 90 in your scrubber or washing machine.

You will find that this specially designed anodic degreasing material SPEEDILY and COMPLETELY removes rolling oil, insoluble smut, dirt and other accumulations from steel surfaces. Is also excellent for removal of smut deposits after the acid pickle.

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Our nearby Technical Service Representative will gladly show you how Oakite Composition No. 90 can be utilized in handling this work effectively in your plant. Write today to have him call... there's no obligation, of course!

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**OAKITE**  
Specialized cleaning  
MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT

# NORTON *has* Complete Service for

## Crystolon Grinding Wheels and Three Types of Diamond Wheels

### CUTTING OFF

For cutting carbide blanks into tips and for salvaging broken carbide tools there's the Norton Metal Bonded Diamond Wheel. It's a strong, fast-cutting, long-lived wheel. And because it is very thin, there's minimum waste of carbide. The most popular specification is D120-N100M 1/8 — diameters 3", 4", 5" and 6".



### ROUGHING SINGLE-POINT TOOLS

The new improved Open Structure Crystolon Wheel is making records in many plants for roughing large single point tools. It cuts faster and cooler and requires less dressing. Stocked in size 14 x 4", 1 1/2" rim,

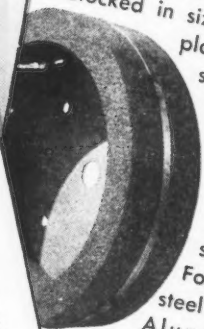


plate mounted, in two specifications 39C60-F12VP and 39C60-G12VP. Also popular is the Norton regular structure Crystolon wheel such as 39C60-17. For backing-off the steel shank there's an Alundum wheel — 38A46-K5VBE.

### FINISHING SINGLE-POINT TOOLS

Outstandingly successful for finishing single-point carbide tools is the new Norton Vitrified Bonded Diamond Wheel with its combination of a fast cutting action plus exceptional resistance to wear and grooving. It is stocked in size 6 x 3/4 x 1/4" (3/4" rim) to fit all 6" carbide tool grinders in specifications D120-N100V 1/16 and D-150-P100V 1/16.

Also available are the Norton fast cutting Resinoid Bonded Diamond Wheel and the durable Metal Bonded.

